

The Golden Hands Encyclopedia of **CRAFTS**

The complete guide to
traditional and modern home crafts

Volume II



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Golden Hands Encyclopedia of
CRAFTS



Marshall Cavendish

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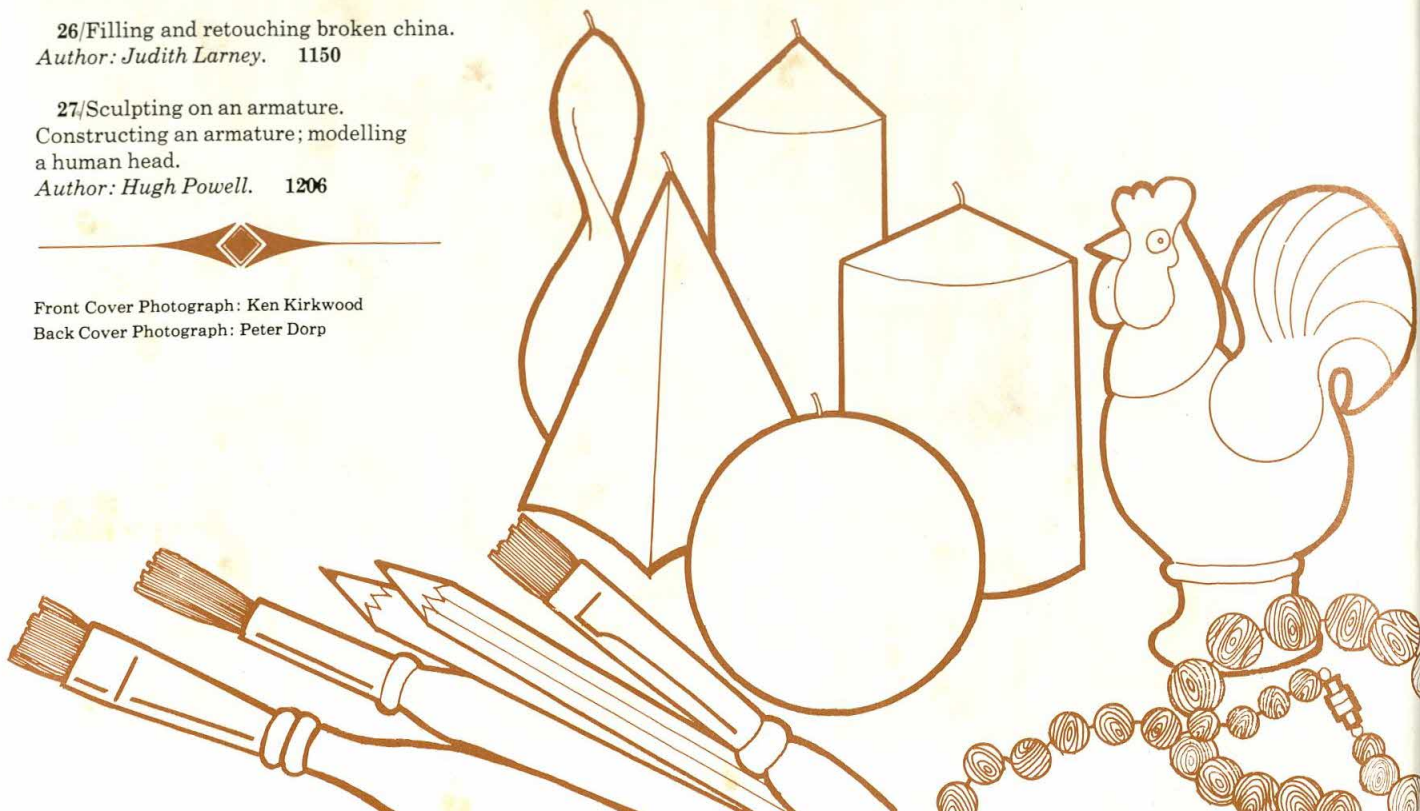
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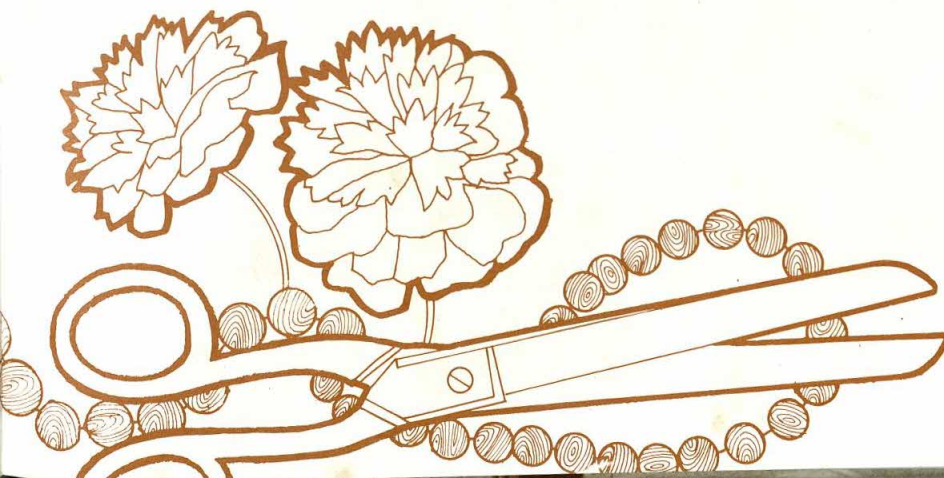
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Please send a s.a.e. with any queries to the suppliers below

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Paper 29. Paper and other materials at stationers and craft shops. Jewelry findings at Gem-rocks of Holborn Ltd, 7 Brunswick Shopping Centre, Marchmont St, London WC1. Box at The Neal Street Shop, 29 Neal St, London WC2.

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Paper 31. Materials at stationers and art supply shops.

Clay 26. See list of tools and materials for mending china in Clay chapter 25.

Clay 27. Clay and tools at The Fulham Pottery Ltd, 210 New King's Rd, London SW6 4NY or at Southern Supplies Centre, 42 Morley Rd, Tonbridge, Kent; Harrison Mayer Ltd, Meir, Stoke-on-Trent ST3 7PX; Ferro (Great Britain) Ltd, Wombourne, Wolverhampton, WV5 8DA who also supply overseas; Wengers Ltd, Garner St, Etruria, Stoke-on-Trent, Staffs ST4 7BQ.

Metal 15. Materials at hardware shops. Blowtorch by Ronson Products Ltd, 352 Strand, London WC2.

Latch-hooking 2. Rug yarns and painted canvases at Rug Plan Ltd, Tivoli Mills, Cork, Eire or Green St, Kidderminster, Worcs. DY10 1XS, who also offer mainly mail order. Chairs, cushion, lampstand and plant all at Heals, (see above).

Latch-hooking 3. Blouse and pinafore at Laura Ashley, 9 Harriet St, London SW1. Ryagarn at rug yarn stockists or write to Handcraft & Co, PO Box 3, Wigston, Leicester LE8 2SY for home and overseas mail order service.

Paint 8. Table frames at Michel & Polgar, 41 Blandford St, London W1. Glass paint at art and craft suppliers.

Paint 9. Glass paints at Hobby Horse, 15 Langton St, London SW10 who can also offer mail order service (catalogue 25p including postage).

Paint 10. On-glaze enamel for professional firing available by mail order from Fulham Pottery, 210 New King's Rd, London SW6 or at Southern Supplies Centre, 42 Morley Rd, Tonbridge, Kent. Towel, sponge and shells at Peter Jones, Sloane Square, London SW1. Soap at Harrods, Knightsbridge, London SW1. Chinese figurine in several sizes available by mail order from Hong Kong Cultural Services, 46 Gerrard St, London W1.

Carpentry 16. Commercial workbenches at DIY and hardware stores.

Weaving 13. For mercerized cotton suppliers see 'cotton' list in Weaving Part 14. Or suitable crochet cotton at The Needlewoman Shop, 146 Regent St, London W1 (offer mail order service). Mounting board at good art suppliers. Tablet weaving materials at Reeves Dryad Shop 178 Kensington High St, London W8 for personal shoppers or write to Dryad, PO Box 38, Northgates, Leicester. Black dress from a selection at Top Shop, Oxford Circus, London W1.

Weaving 14. For yarn suppliers see list in Weaving Part 14. Suitable crochet cotton at The Needlewoman Shop, 146 Regent St, London W1 (mail order service). Sunglasses case and scarf at Harvey Nichols, Knightsbridge, London SW1. Camel dress, beads and bangles at John Lewis, Oxford St, London W1 and branches. Braids by Pat Holton.

Design know-how 41. Silk screen print 'Crivelli's Room' by Gillian Ayres from Editions Alecto, 27 Kelso Place, London W85 QG. Print of the 'Annunciation' by Carlo Crivelli from the Pallas Gallery Ltd, 28 Shelton St, London WC2.

Lampshades 1. Frames and fabrics at John Lewis, Oxford St, London W1 and branches. Also at Lindsay's Handicrafts, 125 High St, Epsom, Surrey who also offer mail order service.

Lampshades 2. Lampshades, frames and materials at John Lewis Oxford St, London W1 and branches; and Lindsay's Handicrafts, 125 High St, Epsom, Surrey who also offer mail order service. Also by mail order from Arts & Crafts, PO Box B87, 10 Byram St, Huddersfield, Yorks, HD1 1DA. Matching wallpaper and fabric from a selection at Laura Ashley, 40 Sloane St, London SW1. Lamp base at Christopher Wray's Lamp Workshop, 600 Kings Rd, London SW6.

Lampshades 3. Lampshades, frames and materials at John Lewis, Oxford St, London W1 and branches; and Lindsay's Handicrafts, 125 High St, Epsom, Surrey who also offer mail order service. Also by mail order from Arts and Crafts, PO Box B87, 10 Byram St, Huddersfield HD1 1DA.

Flowers and Plants 7. For free leaflet, advice and nearest stockist of cold and hot water dyes write to Annette Stevens, Dylon International Ltd, Lower Sydenham, London SE26 5HD.

Flowers and plants 8. Styrofoam balls, cone shapes, dried material and floral wires from the Handicraft Shop, 83 Northgate, Canterbury, Kent CT1 1BA (also offer mail order).

Plastics 15. Tools and materials at Alec Tiranti Ltd, 21 Goodge Place, London W1 for personal shoppers or 70 High St, Theale, Berkshire for mail order. Also at Tylon Ltd, Wollaston, Northants; and Strand Glassfibre, Brentway Trading Estate, Brentford, Middx. Plastic slide binders at Binding Systems Ltd, 3 Chapel Rd, Rowledge, Farnham, Surrey.

Embroidery 7. Evenweave fabrics at The Needlewoman Shop, 146 Regent St, London W1 (also offer mail order).

Embroidery 8. Evenweave fabrics at The Needlewoman Shop, 146 Regent St, London W1 who also offer mail order service.

Glass 11. Glass and lead at Chelsea Glassworks, 105 Fulham Rd, London SW6.

Basketry 8. Materials at Colorcraft, 1 Emson Close, Saffron Walden, Essex CB10 1HL who also offer mail order service.

Modelling 3. Tools at hardware and DIY shops.

Metrication

In this volume you will find two systems of measurement. The first set of figures refers to the metric system and the Imperial figures follow in brackets. Wherever possible, a commonsense approach has been adopted and both sets of measurements have been worked out in round numbers. **BUT BEWARE!** This means that metric and the Imperial figures are *not* equivalent so make sure you only work with one or other set of figures.

This edition published 1978

© Marshall Cavendish Ltd, MCMLXXVI 58, Old Compton Street, London, W1V 5PA

Printed and bound in Singapore by Tien Wah Press (Pte) Ltd

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Steve Bicknell

Creative ideas 40

Paper towel holders

Bamboo and nylon yachting rope—inexpensive and readily available materials—are combined here to make these distinctive fittings for kitchen or bathroom.

You will need:

Length of bamboo 2.5cm (1") in diameter from which you

can cut a piece 28cm (11") long between two joints of the cane, as the bamboo is solid across these joints. A length of nylon yachting rope at least 46cm (18") long and 10mm ($\frac{3}{8}$ ") in diameter. String.

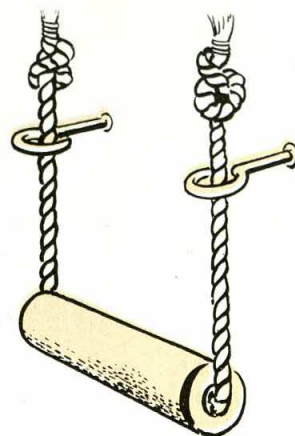
2 cup hooks.

Fretsaw.

Saw bamboo as described. Push the rope through the bamboo. Separate the strands of the rope at each end for 1.25cm ($\frac{1}{2}$ "). Then fray the end of each strand. Wrap the frayed strands of

A toilet roll holder is made the same way as the kitchen one, but uses a shorter length of bamboo. Designed by Lorraine Johnson.

rope together with a length of string just below each frayed end. Make a knot at each end of the rope below the string wrapping. Screw 2 cup hooks into the wall and position them as shown in the diagram, slip the rope in and it will drop down suspended by the knot.



Trevor Lawrence

Introduction to paper quilling

Paper 29



The art of quilling, or decorating with rolled papers, is an ancient one. It has the appearance of great intricacy and complication but the actual process is, in fact, relatively simple.

Thin strips of paper are wound tightly round a stick and then released. As the paper springs open the size and shape of the quill is determined by arresting the movement with adhesive and pinching it into shape. The quills are then assembled into a pattern and stuck down on to the surface to be decorated.

Another early name for quilling was paper filigree—and this accurately describes the original paper imitations of gold filigree used in ecclesiastic art as early as the 15th century. Religious decorations, medallions and pictures then incorporated beads, metal threads and shells, and gaps were filled with coils of tightly rolled paper.

By the late 18th century quilling had become a fashionable craft for young ladies of leisure. They refined the art to the flatter form we know today—composed entirely of rolled paper. Typical of their style of design was the filling of a strip paper outline with as many tightly packed paper rolls as possible. They decorated anything from boxes to furniture panels.

There is certainly something very

soothing and unhurried about the art of quilling. The gentle action of twirling and pinching the quills into shape can be enjoyed whenever you have an occasional quiet moment. And the prepared quills can be stored in boxes until you have time and inspiration to settle down to designing and arranging your composition.

You can use your quills for small things such as greeting cards, to decorate gift boxes or crackers, to make pretty mobiles or jewelry. Or, on a larger scale, you can decorate lampshades or make pictures, fire screens, mirror frames, trays or table tops. The possibilities are almost endless.

You can use paper quills only or hark back to the origins of paper filigree and introduce richness and depth to your decorations by adding a few beads or stones here and there.

Paper and tools

Originally the strips of paper were rolled round a quill—hence the name of the craft. Nowadays this delicate looking craft is usually done on a split cocktail stick or, easier still, a hair grip with the open ends cut off with tin snips or pliers so that the two sides are parallel and hold the paper firmly. You will also need some paper adhesive, a cocktail stick or matchstick for applying it, and, of course, quilling paper.

Special quilling paper is available from some craft and hobby shops, but colours are usually somewhat restricted. Carnival streamers are just as suitable and often easier to buy. They come in packets of assorted pastel shades. You can use them singly or have fun combining two colours, either winding them simultaneously or using one after another in the same quill. If you choose the latter combination, join the end of one coloured strip to the beginning of the other before you start quilling. Just overlap the two strips of paper and secure with a spot of paper adhesive.

The basic method

The length of the paper strip and the number of rotations you make are up to you (one part of a multiple pattern, however, must of course be the same as the others) but for experimental

purposes a 20cm (8") strip is about right.

Loose coil is the most basic quilled shape and a good one to start practising first (fig.1). Place one end of a 20cm (8") strip of quilling paper or colourful carnival streamer in a prepared hair grip.

Check that it lies level with the top of the grip. Then rotate the grip with one hand and roll the paper on to it with forefinger and thumb of the other hand. Roll the paper slowly to begin with so that it spirals quite tightly, and check that the top edge of the spiralling paper remains level.

When the paper is completely rolled, give it a gentle squeeze with the fingertips to tighten the curve before releasing.

Hold the coil gently with one hand and remove the hair grip with the other. It may be necessary to unwind the paper a little to release the tension before you can remove the grip.

Ease the coil to the size you wish. Then apply a little adhesive to the loose end of the paper strip and stick it on to the spiral of paper immediately inside so that the quill holds its shape firmly.

Loose open coil is made exactly the same way but left to spring free without any sticking (fig.2).

Tight coil is, as the name implies, not allowed to spring free or eased out but stuck on to itself before removing from the grip (fig.3).

Tear-drop is made like the loose coil. After sticking, pinch one side to a point, with the stuck end of the strip coming down to the point (fig.4).

Eye shape is made like the tear-drop but both ends are pinched. Particularly effective if you allow the centre of the spiral to remain intact, like a round pupil (fig.5).

Leaf-shape is like the tear-drop but the whole is allowed to elongate, then pinched with gentle curves in opposite directions (fig.6).

S-shape. Roll one end of the strip to just over halfway. Then turn the strip and roll the other end. Roll it in the same direction, again rolling to just over halfway. Let it spring free. No adhesive is necessary (fig.7).

Scroll. The same as the S-shape but with both coils on the same side of the strip. Again no adhesive is needed (fig.8).

Heart. Similar to the scroll but the strip is first creased in half (fig.9).

V-shape. Exactly the same as the heart but rolling away from the inside of the crease (fig.10).

1-10, right: basic quilled shapes.

Far right: strips of quilling paper, a cocktail stick or hair grip, paper adhesive and scissors are all you need to make paper quills.



It is quite easy to make your own jewelry with beads and paper quills.





There is no need to stick to the ten basic quilled shapes. Have fun inventing new ones of your own. Decorative fish includes a large heart-shaped quill for a tail.

Tousled hair effect is achieved by use of loose open coils and random gluing. Curly wigs for fancy dress and amateur dramatics could be made with masses of large open coils.

Dragonfly uses quills of various shapes each placed separately on card. Tortoise, like fish, is made of quills glued close to each other. Snails are simple but effective.

Decorating cards and boxes

It is possible to start by decorating a small flat surface (such as a greetings card or small box), and to choose a simple design. The natural shape of your quills will suggest subjects, but abstract designs can be equally effective—gain inspiration from the twisting shapes of wrought iron work.

Simple designs like these, which involve a few quills only, will not require a pattern guide for sticking. Lay the quills on top of the surface to be decorated and arrange into a pleasing composition. Then remove, one by one, and stick into position.

Hold the quill in one hand and use a match or cocktail stick to spread a drop of paper adhesive across the bottom edge of the centre coils. (Sticking the central coils only, and leaving the outer ones free, is not only less messy from a technical point of view but it will also give your composition more sense of movement.) Lightly press the quill on to the surface to be decorated.

Filigree mobiles and jewelry

Conversely, when the designs are free-standing adhesive is applied to the outside coil of each quill only along the curved side at the point of contact between one quill and its neighbour. In order to do this successfully, it is a good idea to make yourself a little work board.

Using a work board. To make simple work board to use for quilling, take a piece of thin plastic foam or other soft but firm material and lay it on a flat surface.

Cover with a piece of transparent waxed paper or tracing paper, stitching or stapling it on to the foam at the corners to hold firm. If your design is a complicated one, you can slip a pattern under the transparent paper so you have a design guide to follow when sticking.

Lay one quill on the transparent paper, and place a pin through the central hole to prevent it from slipping.

Take a second quill and spread a little adhesive along the outside coil at the point where it will touch the first quill. Abut and lightly press the two quills together. Then place a pin through the second quill to hold it in position.

Making up the design as you go, or following your predetermined pattern, stick and pin the rest of the quills until the composition is completed.

When the adhesive has thoroughly dried and the pins have been removed you will be able to lift your freestanding quilling away from the work board. Hang the quilling from a thread for a mobile. Varnish jewelry items with several coats of clear acrylic or polyurethane spray for strength and attach to suitable findings.



Above: this delicate-looking butterfly involves many quills and takes some time to make but the result is a delightful mobile.

Below: use a work board and pattern to make free-standing items like mobiles or jewelry. Varnish paper for durability before adding seed pearls.



Simple repairs for broken china

Clay 25



If a favourite piece of china is broken, it need not be discarded or clumsily mended so that it is no longer satisfying to look at or use.

Chipped and broken ceramic articles can, with care and the right materials, be mended very satisfactorily. China restoring is not only a task, however—it can also be a fascinating hobby in which rewarding results of a very high quality can be achieved.

This chapter and the next are intended to provide a guide to the simple procedures of rejoining breaks and filling chips, which will probably be sufficient for most household repair tasks.

Equipment

The ceramic restorer does not require a great deal of equipment or facilities—a small space and some simple tools are all that is necessary.

Working space. A separate workroom would be the ideal arrangement, so that objects can be left safely while adhesives set or retouching dries.

However, a cupboard into which the articles can be locked away and a clear surface working area are adequate. Ideally, the surface should be Formica-topped as this material is easy to clean and unaffected by the solvents used.

Tools. Most tools can be collected over a period of time as different jobs require them.

A small number of hand tools is necessary from the start, and these include one or two different sized scalpels with blades, available from artists' suppliers, a stainless steel palette knife, a pair of tweezers and one or two small metal spatulas.

Other items that may be needed, according to the job, are a small pair of pliers, junior hacksaw blades and a pair of scissors. A medium-sized vice of the variety that clamps on to the edge of the table is also useful.

Two or three files, curved if possible, are sufficient to begin with, and more can be collected in time. Files can be purchased either from a jewellers' supply shop or a good ironmonger. These, combined with a selection of wet or dry carborundum papers ranging from very fine to coarse, should cover all the requirements for dealing with fillings.

A roll each of 1.5cm ($\frac{1}{4}$ ") and 2cm ($\frac{3}{4}$ ") sticky tape is necessary, and it is wise to invest in a dispenser which makes it easier to tear off strips with one hand. A good supply of cotton wool, soft clean rags and paper towels is essential. You will also need a selection of small glass or polythene containers, paste-pot sized, for solvents. Polythene squeeze bottles are ideal for larger quantities of solvents, but these must always be clearly labelled and locked away when not in use, out of reach of children.

Small squares of glass or ceramic tiles are ideal palettes for mixing adhesives and fillers, and a sheet of white Formica can be used as a palette for the colouring process.

Adhesives

Araldite AY103/HY951 available in a tin with bottled hardener, is preferable, but is more difficult to use than the two-tube variety because it must be mixed in the proportions of nine parts of hardener to 100 parts of resin. It is difficult, without special scales, to weigh out these proportions accurately. The two-tube Araldite is easier to mix in a 50/50 ratio. Its disadvantage is that it tends to yellow, and is much thicker, but it is adequate for the beginner.

Other epoxy resin adhesives include the fast-setting varieties which are not as strong, but can be very useful for some jobs. It is, however, advisable not to use them when you are learning the basic principles of bonding ceramics, as they do not allow much time for adjusting the accuracy of joints.

Polyvinyl acetate emulsions are good adhesives for smaller earthenware objects, because they are easy to use and very strong. They are, however, water-based and should not be used for articles that require constant washing in hot water.

Polyester Resin Sintolit sets hard in about ten minutes, and is suitable for larger earthenware objects such as chargers and bowls. Care is necessary when using this adhesive however as it discolours badly and must therefore be kept within the perimeter of the break edges. Its main advantage is the fact that the pieces can be held or supported

in position whilst the adhesive sets, which is particularly useful when handling a large object.

Other adhesives that can be used for the harder-bodied ceramics and glass are the cyanoacrylate adhesives which are instant-setting under pressure, but they should be avoided until you are practised in the basics of bonding. Keep out of reach of children.

Other materials

Titanium dioxide white pigment and kaolin powder are also required, as is a full range of artist's grade dry pigments. A polyurethane varnish such as Rustins is used in combination with the dry pigments for retouching.

Brushes should be bought only when they are needed for a specific job; they should be best quality sable and are very expensive.

In general, an epoxy resin adhesive such as Araldite combined with white pigment and kaolin powder is used as the filler for the harder-bodied ceramics like porcelains, and Polyfilla, sometimes with a pigment added, is used for earthenwares.

To re-do an old repair

If the plate has been previously repaired, several things must be done before the pieces can be stuck together again.

To remove an old adhesive

First, any old repainting must be removed, and this can be done with either the solvent acetone, or with a paint stripper such as Nitromors. As always when dealing with strong solvents, take care to protect your skin. The plate may have been stuck together with any one of a variety of adhesives, and the following is a list of the types most commonly encountered and the solvents with which they can be broken down.

Adhesives solvents

Cellulose adhesives: warm water or acetone.

Animal glues: warm water.

Rubber solutions: toluene, turpentine or Nitromors.

Shellac: a 50/50 solution of ammonia and methylated spirits, or Nitromors.

Epoxy resins: Nitromors.

If you are not sure which adhesive has been used, start by soaking the plate in warm to hot water. If this does not work, try acetone and so on, working through the solvents until the correct one is found.

A common mistake made when using hot water is to put the object in and then allow the water to cool off. The

temperature should be kept at a consistent level either by topping it up with more hot water as it cools, or by replacing it altogether.

If the object is too large to soak in a solvent such as acetone, cotton wool swabs soaked in the solvent can be placed along the break edges and replaced as often as necessary to break the adhesive down.

The breaking down of adhesives can be a long job, and a certain amount of patience is required. It is also a good idea to pre-soak any object in water before using solvents. This applies particularly to earthenwares and other porous bodied ceramics. By this process any staining produced by the old adhesive will be prevented from being drawn into the body as the water acts as a barrier.

When shellac is being broken down with Nitromors it can sometimes produce a purple stain, which will penetrate quite deeply into the body of the object under the glaze unless this water precaution is taken.

Removing rivets. Another stage in the breaking-down process that may be necessary is the removal of rivets. Rivets are small metal clips that are sometimes used to hold together a join. It is sometimes possible to pull these straight out with a small pair of pliers, having previously soaked the whole object in water or having placed wet cotton wool swabs over the rivets.

More often, however, the rivets must be sawn in half with a small hacksaw blade. Saw gently across the centre of each rivet, taking care not to damage the surrounding glaze. Each half of the rivet can then be gently twisted around and pulled out with pliers (fig.1).

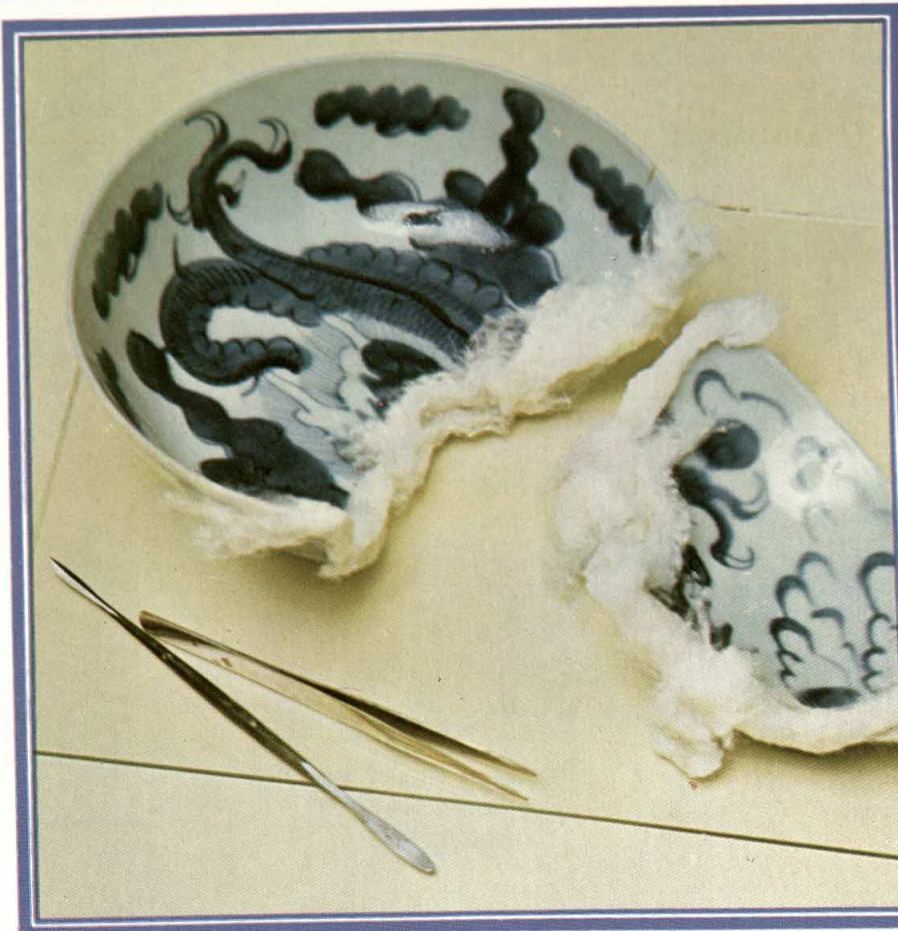
When the object to be mended, such as a plate, has been separated into the broken pieces once more, any remaining adhesive is removed from the break edges either with solvent or, if necessary, manually with a scalpel blade.

Removing stains. It is quite likely that the edges will be stained, and this can be checked when the two break edges are brought together after the removal of the adhesive. Any stains must be removed as they will spoil the look of a good join.

Hydrogen peroxide can be used to draw out stains, and this is done by applying cotton wool soaked in the peroxide along the edges and leaving for two or three hours. If necessary, repeat the process as often as is necessary to draw out the stains (fig.2).

1. Top: when a rivet has been sawn in half, gently remove each half with a pair of pliers.

2. Right: bleach stained break edges by applying cotton wool soaked in peroxide.





3. Arrange the pieces in order and apply adhesive to the first break edge.



4. Use the sticky tape to anchor the break edges together.



5. Apply sticky tape to the back of the break as well as the front.



6. Allow 24 hours for adhesive to set. If there is gilding on the plate, swab the tape with white spirit before removing it or the gold may peel off.

30vol peroxide is usually the maximum strength obtainable from pharmacies, and this should be used neat. If you have 100vol peroxide, dilute it to one part to three parts of water. When all the break edges are clean, they must be washed and allowed to dry.

Removing grease and dirt. Immediately prior to bonding it is essential to wipe all the edges with acetone to remove any grease or dirt marks left by the fingers.

Bonding

The actual process of bonding is not always as easy as it sounds, and it is

wise to practise first on plates or saucers that are of little value. Using a plate similar to the one in the photographs, the bonding process is as follows.

You will need:

Two-tube Araldite mixed in 50/50 proportion. Into this, grind enough white pigment (titanium dioxide) to make a white mixture, and enough kaolin to give a putty-like consistency. Sticky tape, narrow or wider depending on the size of the plate. Cotton wool.

Acetone or methylated spirit.

□ First, make sure that everything you will require is close at hand.

□ If there are more than two or three pieces to bond, check the order in which they are to be put together or you may end up being unable to fit in the last piece.

□ Once you have worked this out, apply the adhesive to one break edge (fig.3) and attach a strip of Sellotape to it.

□ Bring the two edges together, taking care not to grate them, pull the tape across the break to the second piece and press down. The two pieces are then anchored together and can be handled more easily.

□ Apply another strip of tape in the same way to the back of the break.

□ Stick another strip of tape first to one side of the break and then pull it as tightly as possible across to the other side, thus ensuring that the pieces are fitting together as closely as possible (fig.4). The same is done to the back of the two pieces, ensuring that the tensioning is even (fig.5).

□ A fingertip run over the break will tell you if there is perfect alignment. If there is not, more tape is necessary to adjust any discrepancy.

□ Join the third piece on in the same way, remembering always to apply the tape systematically, front and back, keeping the tensioning even.

In this way, the whole plate is reconstructed piece by piece (fig.6).

□ A full 24 hours should be allowed for the adhesive to cure before the tape is removed.

Gilding. When stripping off the tape from a plate that has been gilded, you may find that the gold lifts off with the tape. In this case white spirit should be liberally swabbed over the sticky tape, to release its adhesion to the glaze so that no pulling is necessary. The surface of the plate can then be wiped over with acetone to remove any stickiness.

□ Any excess Araldite on the breaks is taken off with a sharp scalpel blade, and the join is complete (fig.7).

The next chapter deals with filling and repainting chips and small missing pieces.

7. The plate, when it has been properly repaired, looks as good as new. The next chapter discusses filling in and repainting missing pieces and retouching the repair for this perfect finish.



Soft soldering techniques

Metal 15



Soldering is a simple method of joining two pieces of metal together by means of a molten metal filler. There is more than one kind of soldering, though the method is always similar. The difference between them is that some solders are harder and stronger than others, and melt at different temperatures. This chapter introduces the tools and materials—subsequent chapters show working techniques and projects for soft soldering.

The three essentials are solder, flux and heat. There are different types of solders and fluxes, and the heat is provided by a soldering iron or a blowtorch. These must be combined in the correct way to suit the metal to be soldered together (see chart). Don't become confused with different metals, fluxes and solders by thinking of all the things you want to make. Instead, think in terms of a particular application, for example, solder tin cans together—to make a tool tidy or a plant hanger—using a copper bit, mild flux with a 60-40 solder. All these terms are explained and the chart shows you which solder and flux to use with different types of metal.

Heating equipment

Most people have at some stage or other seen the basic soldering tools—a blowtorch or soldering iron—being used. The blowtorch is reminiscent of a flame thrower and looks a ferocious piece of equipment but in fact it is a very useful one. It is not difficult or dangerous to use providing the necessary safety precautions are taken. A soldering iron does the same thing as a blowtorch but it is quite different in appearance and not as versatile. It resembles a screwdriver with a pyramid-shaped copper tip which is either heated over a naked flame or has an element which is electrically heated. It is used for very fine work such as joining the intricate wires of a transistor radio and for making fine jewelry. Despite the difference in the appearance of the two pieces of equipment, both have the same function and the same technique is used for both. They both supply the necessary heat to solder or join two pieces of metal together. If you have the equipment

already you probably have some idea what you can do with it but, if you are buying it, you must decide which you prefer—a blowtorch or a soldering iron—and how much you want to spend and how useful either is going to be. If you decide on a blowtorch it is worthwhile getting one to which a copper tip—also known as a bit—can be added.

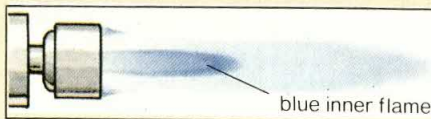
Blowtorch

The modern blowtorch is a very versatile item. It is available in various sizes from something not much bigger than a cigarette lighter to heavy industrial equipment. The easiest to use around the house is a fairly small one with portable gas cylinder which is not much larger than a can of hair-spray. A very small blowtorch will supply the necessary heat for soldering but will not lend itself to much more.

The slightly larger ones are far more versatile as they can be fitted with various attachments and are also suitable for hard-soldering. With this type of blowtorch the flame can be adjusted to do small and large joins.

A copper bit can be added so that it works exactly like a soldering iron which means you can work with mild and acid fluxes.

The flame on a blowtorch is easily adjusted by turning a knob. The inner part of the flame, which is blue, is the hottest and the length of this flame



1. Inner flame is source of heat.

indicates the amount of available heat (fig.1). For very fine intricate work, as when making jewelry, the inner flame should be about 6mm ($\frac{1}{4}$ "). This will only heat a very small part of the metal and is easily controlled. It also means that if you are soldering near to another soldered joint the heat will not spread and undo this joint if you work fast.

For less intricate work, but where the join is still reasonably small, a 12mm ($\frac{1}{2}$ ") inner flame setting is needed. For larger jobs, where the heat has to be spread over a large area, set the inner flame to 25mm-30mm (1"-1 $\frac{1}{4}$ ").

Soldering iron

Electrically heated soldering irons are available in various sizes. A 15 watt iron is for very small intricate work and a 100 watt is suitable for light sheet-metal work. It is easy to work with and light to hold. Make sure that the soldering iron is correctly wired and it must be earthed. The iron runs off any power socket.

The copper bit or tip of the soldering iron (or blowtorch attachment) must be clean before you start soldering. Remove all traces of dirt or solder with a metal file. Heat the bit and dip it into the flux. (Contact between the hot bit and the flux will give off fumes—avoid breathing them.) Then apply the solder; let the solder melt and cover the working tip of the soldering iron. The iron is now ready for use.

Suitable metals

Most metals can be soft-soldered. Aluminium is an exception and zinc is difficult but this still leaves you with readily available metals such as brass, copper, tin, lead, iron, steel, nickel and silver. Gold is also suitable but is, of course, very expensive and not readily available.

The various metals are all soldered in the same way but some need a different type of solder and flux for any particular application.

Solder

Solder is the 'metal' which is heated to form a molten filler to join metal together. It must have a lower melting temperature than that of the metal being joined together. It is an alloy made from tin and lead and may also contain small amounts of other metal such as copper. It is identified by its composition, ie 60-40 solder is 60% tin and 40% lead—the tin content is always indicated first. For the best results use the solder, indicated on the chart, with the different types of metal.

Soft solder melts below a temperature of 450°C (842°F). It is sold in strip or rod form in various sizes. A 6mm ($\frac{1}{4}$ ") thick strip is suitable for most general purpose soldering. It is referred to as tinman's solder. Soft solder in the form of wire normally includes its own flux, it is known as radio quality solder or cored solder and is meant for electrical work.

Hard solders melt at temperatures above 450°C (842°F) and are mainly used for structural purposes or where a very strong joint is required.

Flux

Flux is a chemical compound that prepares the metal surfaces for joining. It also helps the molten solder to flow smoothly. The usual type of flux is in the form of paste and is sold in tins.

A metal surface might look bright and clean but there is always a certain amount of oxide present on the surface which increases when the metal is heated. The flux dissolves these oxides that form as the metal is heated. The molten solder flows freely where flux is applied so it is essential to apply it neatly and only on that part of the metal where solder is required.

There are two basic types of flux.

Mild fluxes are non-corrosive. They are especially suitable where it is difficult or impractical to clean a join after soldering is completed. *They must only be used in conjunction with a copper soldering bit as they are inflammable and will burn if exposed to the hotter temperature of a blowtorch flame.*

Acid fluxes are corrosive. They are available in liquid or paste form and as they contain acid you should clean any of it that you might spill. Avoid contact with clothing, skin and eyes, etc. Wash off any spilt flux with plenty of soapy water. Acid fluxes have better solvent properties and are therefore generally more effective. *They leave a corrosive residue which must be removed after soldering is completed.* This is done with soapy water. Acid fluxes can be used with the blowtorch flame and the soldering iron.

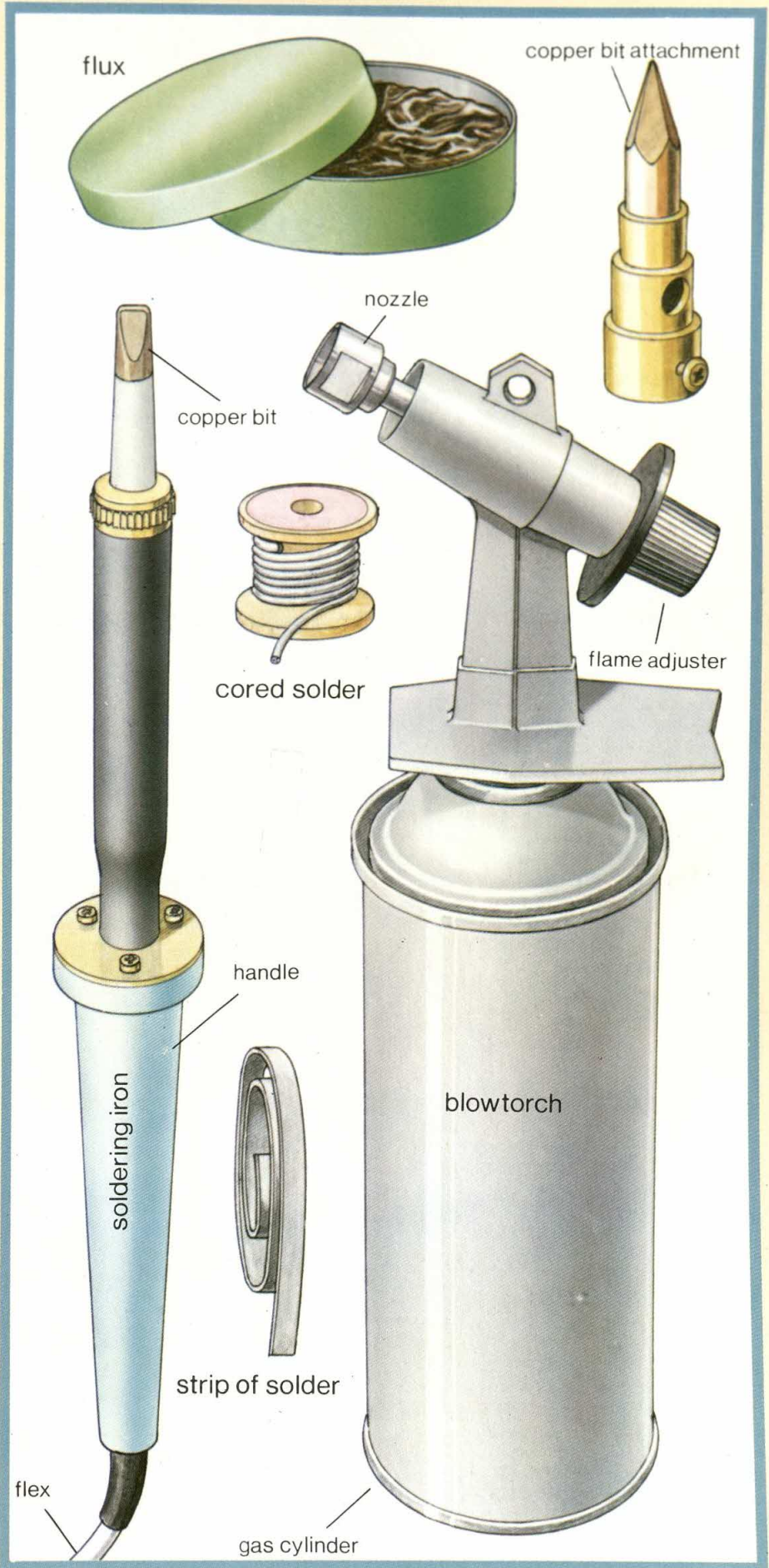
Soft solder and flux selection guide

Metal to be joined	Solder		Flux
	%Tin	%Lead	
Brass or Copper	50	50	Acid or Mild
Tin	60	40	Mild
Lead	50	50	Mild
Iron or Steel	50	50	Acid
Gold or Silver	70	30	Acid
Nickel	50	50	Acid

The fluxes shown on the chart are the recommended ones. They are meant as a guide and not as a rule. Acid fluxes can usually be used where it is possible to wash off the residue after soldering is completed. A mild flux must be used when it is impossible to clean the join after soldering as the corrosive properties of an acid flux will damage the metal eventually.

If in doubt ask your dealer for his recommendations on solder and flux for specific jobs.

A soldering iron has a copper bit which is heated for soldering whereas a blowtorch has a naked flame. A copper bit can be fitted to the blowtorch, making it more versatile.



Making a pile rug

Yarn — latch-hooking 2



Rugs made by the latch-hook method using Turkey wool are thick and hard-wearing.

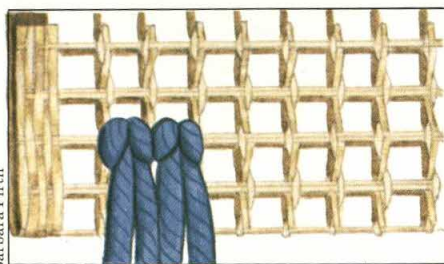
A large rug need not take too long to make if two people work it simultaneously from opposite ends of the canvas, using both forms of the knot described in Latch-hooking chapter 1, page 1110.

Straight-sided rugs

Starting off. For a rug with straight sides, place the canvas on a table with the selvages to your left and right and with the full length away from you.

As you progress, roll up the worked section so you do not have to lean over it to reach the row on which you are working.

To make a neat strong edge, turn up the cut end nearest you for about 5cm (2") and fold it down so that the holes match the holes underneath exactly. Tack the edge in position. The first few rows of knots should be worked on the weft threads through double thickness. Leave the first two rows of holes in from the folded edge and one at each side of the canvas and work the first line of knots on the next weft thread from left to right (fig.1) or right to left if you are left-handed.



Barbara Firth

1. Starting place for the first row of knots with a margin left for the edging.

Work the second and subsequent rows on the following weft threads, leaving one hole at each selvage, to within 5cm (2") of the required length.

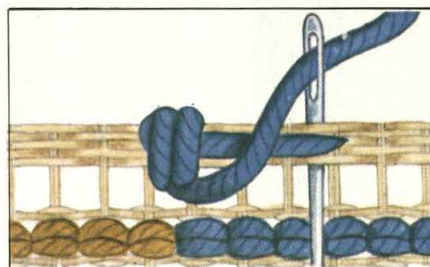
Finishing off. When the worked area of the rug is 5cm (2") shorter than the required length, turn up the surplus canvas on to the right side and work the remaining rows of knots through the double thickness. Leave the last row of holes free for the edging.

Working the edging. To give a firm finish to the folded edges and to neaten

the selvage, a row of oversewing should be worked all round the edge of the rug. For this you should use a carpet needle with a large eye and a skein of yarn in a colour to match or blend in with the colour used at the edge of the rug. The edging stitching is worked from left to right with the back of the rug facing up.

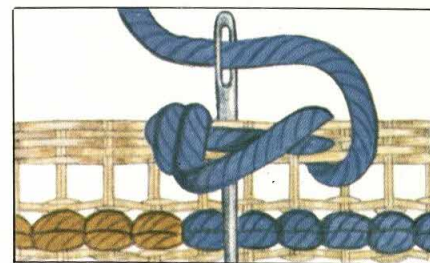
□ Hold the end of the yarn to the right so that it will be covered by the stitching, insert the needle into the first hole (it doesn't matter where you start) and work a few oversewing stitches over the outside thread of canvas to cover the yarn end.

□ Pull the needle through the same hole towards you, move to the fourth hole to the right, taking the yarn over the outside canvas thread and through the hole towards you (fig.2).



2. Covering the tail of yarn.

□ Take the yarn over the canvas thread at the top of the fourth hole, go back to the second hole and pull out the yarn towards you (fig.3).



3. Starting the plaited edging.

□ Take the yarn to the fifth hole, back to the third and so on in this way all round the edge.

Many attractive latch-hook rug designs, like this one by Rugplan, are inspired by classic Oriental patterns.



Jerry Tubby





Above: the back of the blue and gold rug showing how the pattern is repeated, in mirror image, on each quarter. When

you have finished the rug, it is advisable to check from the back for missed knots and other mistakes.

Blue and yellow rug

Completed size: 90cm x 178cm (36" x 70").

You will need:

Canvas, 1.83m (2yd) of 90cm (36") rug canvas, 10 holes per 7.5cm (3").

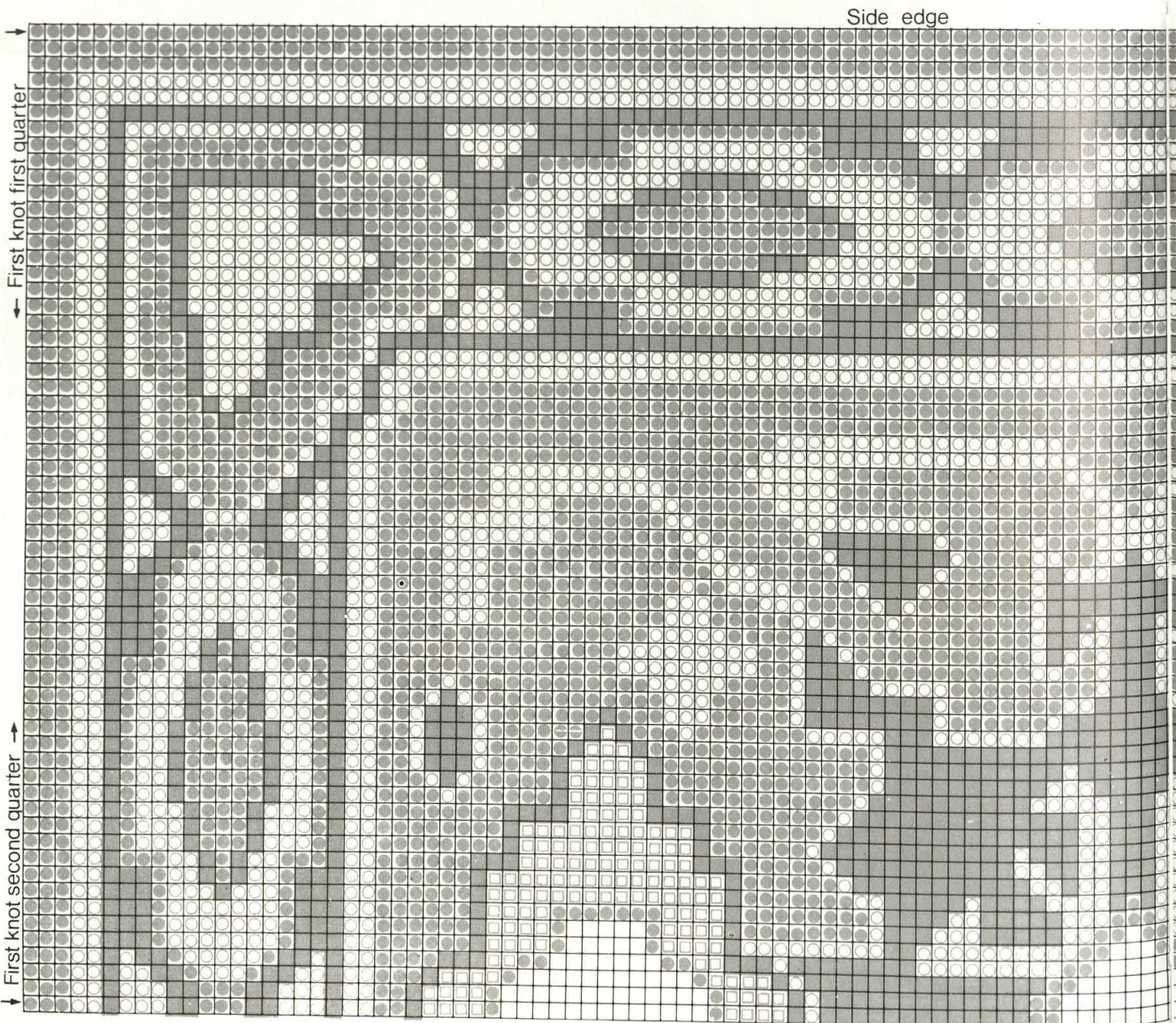
Yarn, cut packs rug yarn (320 pieces per pack)—see chart.

2 skeins background colour for edging.

□ Prepare the canvas as described overleaf, but turning up the cut edge for 2.5cm (1") only.

Using the chart. The chart shows one quarter of the rug only, because the pattern is repeated on each of the remaining three quarters. Work the first row from left to right, following the chart and working the colours as shown in the key.

□ When you reach the centre of the row complete it, still working from left to right but following the chart



Colour	Symbol	No. of cut packs
Primrose yellow		2
Antique gold		24
Sun yellow		4
Dark blue		24
Mid blue		38

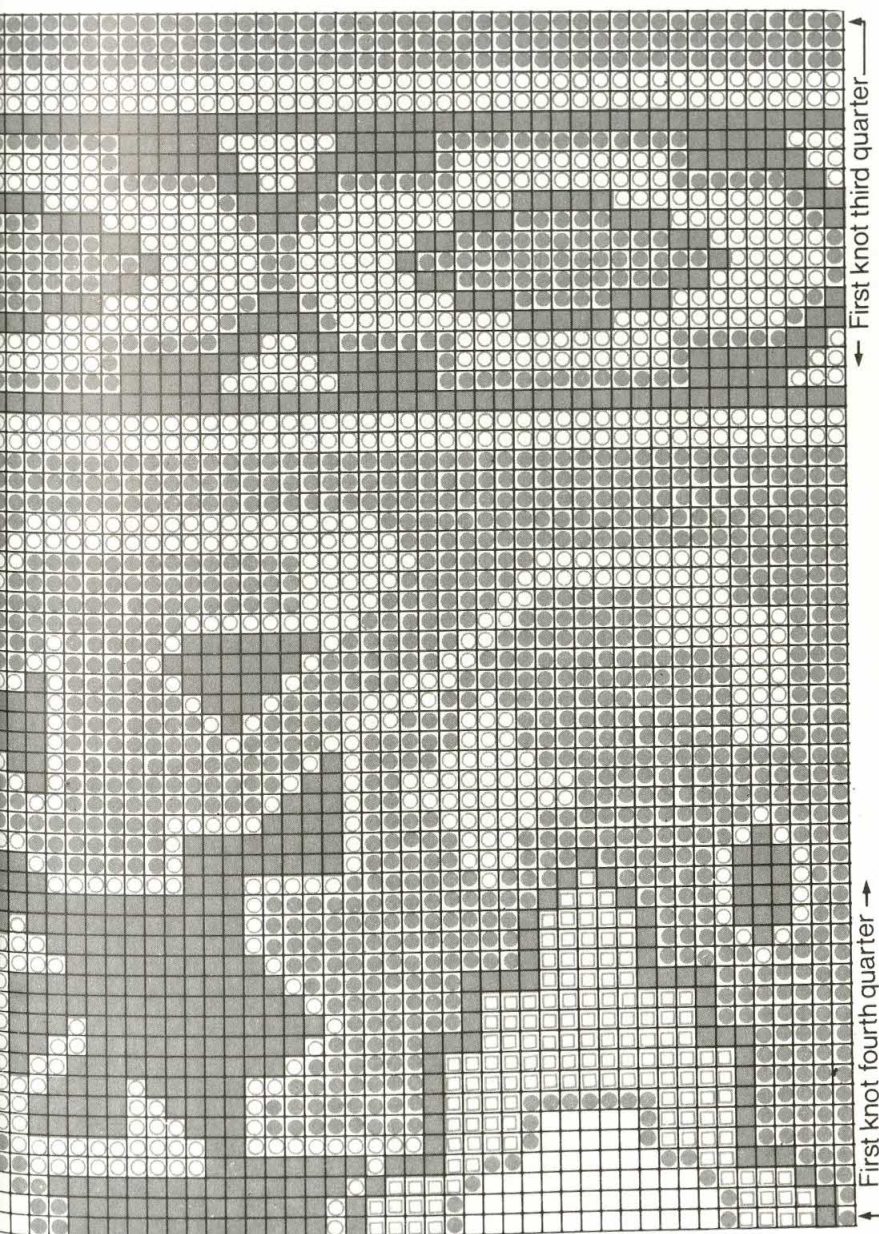
from right to left so that the mirror image is formed.

□ When you have completed half the rug, turn the chart around.

Working from right to left, but following the same principle as before, repeat the last row worked. Work back to row one, working the last few rows through doubled canvas.

□ Work round the rug in edging stitch.

Below: the chart for the blue and gold rug, showing a quarter of the design. To work the mirror image for the remaining quarter of the first half, work the knots from the centre outwards. For the second half turn the chart upside down and work as the first half.



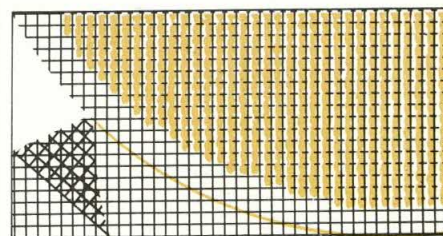
Round rugs

Starting off. Mark the area of the rug on the canvas in felt-tipped pen. Do not trim the canvas until the pile has been worked. Work the pile in straight rows across the marked area. None of the rows is worked through double thickness of canvas.

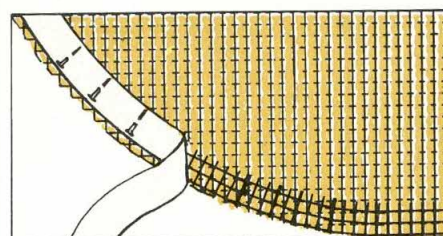
Semi-circular rugs. Mark the shape of the rug so that the straight edge lies along the selvedge of the canvas.

Finishing off. To make a neat, strong finish for round rugs (or for the curved edge of a semi-circular rug) you will need a length of carpet tape, 2.5cm (1") wide, to fit the circumference plus 5cm (2") for turnings. The carpet tape is attached with strong sewing thread, such as linen carpet thread or a button thread, and a large needle.

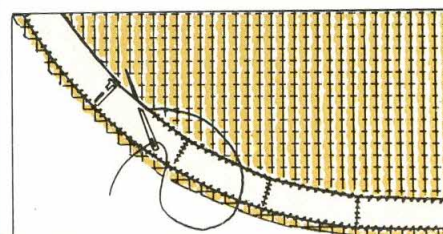
Trim spare canvas (fig.4a) to within 2.5cm (1") of the pile. Fold under the unworked canvas on to the wrong side of the rug and pin on the carpet binding so that it is 6mm ($\frac{1}{4}$ ") in from fold (4b). Hem outer edge of the tape in place firmly using the strong thread. Pin the slight fullness which will have formed along the inner edge of the tape into darts and then hem the edge into place (fig.4c).



4a. Trimming the surplus canvas to within 2.5cm (1") of the knots.



4b. Pinning carpet tape to the folded edge of canvas.



4c. Hemming the inner edge of tape with the slight fullness formed into darts.

Rag doll wardrobe

Cloth —
toys 6

In Toys chapter 5 there are instructions and a pattern for making a rag doll. Here are the patterns and the instructions for making her a whole outfit—dress, petticoat and knickers.

The complete outfit

You will need:

50cm (½yd) of 90cm (36") printed cotton fabric for dress.
50cm (½yd) of 5cm (2") lace for sleeves.
20cm (¼yd) of 1cm (⅜") lace for neck.
3 small buttons (or press studs).
90cm (1yd) 6mm (¼") elastic for sleeves and for waist of petticoat and knickers.
40cm (¼yd) of 90cm (36") white cotton lawn for petticoat and knickers.
1.1m (1¼yd) 5cm (2") wide broderie anglaise insertion and edging combined (approximately 1.5cm (⅝") wide

insertion and 3.5cm (1⅜") wide edging).
Matching thread.

Tracing paper and pencil.

Note: seam allowance of 1cm (⅜") is included on pattern unless otherwise stated.

Dress

- ☐ Trace off the pattern for the bodice and sleeves.
- ☐ From printed cotton cut a piece for the skirt 73.5cm x 26.5cm (29"x10½").
- ☐ From remaining printed cotton cut out two sleeves, two bodice back pieces and then one bodice front on the fold.
- ☐ With right sides facing, tack and

The finished doll wearing her complete outfit. A pretty victorian print has been chosen for the dress.

stitch front and back bodice together at shoulders.

☐ Run a gathering thread along the top of one sleeve 6mm (¼") from the raw edge.

☐ Pin this sleeve to armhole of bodice, with right sides together and matching shoulder seam to centre of top of sleeve. Pull up gathers to fit. Tack and stitch.

☐ Repeat with other sleeve.

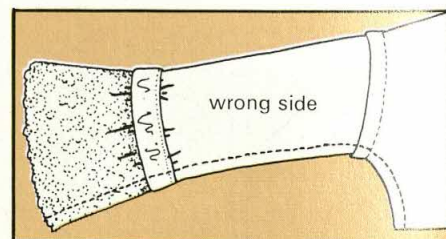
☐ Turn 3mm (⅛") and then 1.5cm (⅝") on bottom of sleeve to wrong side. Tack and stitch close to edge of first fold.

☐ Cut a piece of 5cm (2") lace to fit the bottom of the sleeve and topstitch it along the very edge of the sleeve.

☐ Cut a piece of elastic 11.5cm (4½") long and thread it through the casing you have just made and secure the ends.

☐ Repeat with the other sleeve.

☐ With right sides together and matching at all points, tack and stitch raw edges of lace, sleeve seam and bodice side seam in one operation (fig.1).



1. Lace, sleeve seam and bodice side seam stitched in one operation.

Trim turnings to 6mm (¼") and neaten together.

☐ Repeat with the other side.

☐ With right sides facing, stitch the two short edges of skirt piece together to within 10cm (4") of one long edge (waist edge).

☐ Mark side and centre front of top of skirt with single tailor's tacks or pins.

☐ Run a gathering thread along top edge of skirt 1cm (⅜") from the edge.

☐ Pin skirt to bodice, with right sides together, pulling up gathers to fit. Tack and stitch. Press seam up on to bodice.

☐ Turn 3mm (⅛") and then 6mm (¼") on either side of back opening to the wrong side. Tack and stitch close to first fold.

☐ Cut a 2.5cm (1") wide bias strip in printed cotton (Sewing chapter 6, page 400) to fit the neck, plus a little extra for turnings.

☐ With right side of binding to wrong side of bodice, tack and stitch the

Washing day! Broderie anglaise trimmed petticoat and knickers hanging up to dry with the lace-trimmed dress which is fastened with tiny buttons. Designed by Rosemary Hoar.

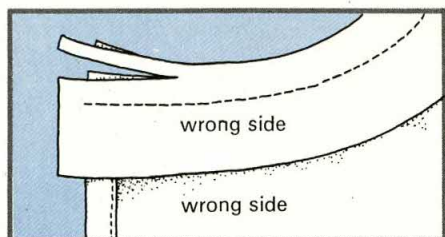


Martin Chaffer

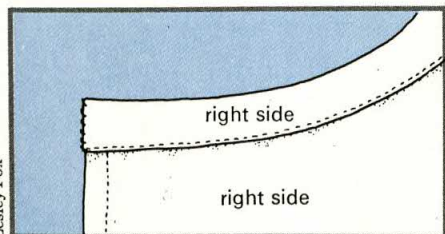




This gingham dress has a simple sash which matches the doll's hair ribbons.



2a. Trimming bias strip and neck edge.



2b. Bias turned to right side of bodice, 6mm ($\frac{1}{4}$ ") turned under and lower edge topstitched. The ends are slip stitched.

strip to the neck edge. Trim seam allowance to 6mm ($\frac{1}{4}$ ") (fig. 2a).

□ Trim raw ends to 6mm ($\frac{1}{4}$ ") and turn to wrong side of bias strip. Turn bias on to right side of bodice. Turn under 6mm ($\frac{1}{4}$ "), tack and topstitch close to lower edge of bias. Slip stitch the ends (fig. 2b).

□ Slip stitch the 1cm ($\frac{3}{8}$ ") lace around the neck on the stitching line, turning in and neatening the ends.

□ Attach buttons to left side of bodice back and make buttonholes in the other side to correspond.

Alternatively, attach press studs.

□ Turn 3mm ($\frac{1}{8}$ ") and then 1.5cm ($\frac{5}{8}$ ") to wrong side at lower edge of dress and slip stitch the hem.

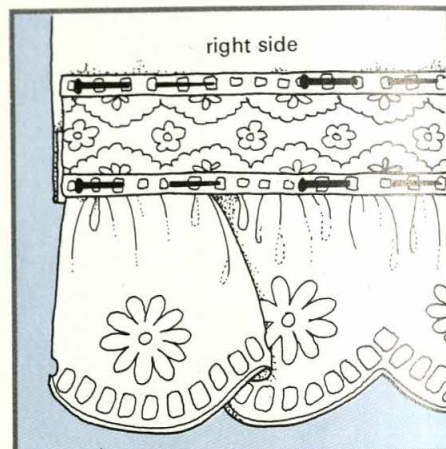
Petticoat

□ Cut a strip of white lawn 73.5cm x 24cm (29" x 9 $\frac{1}{2}$ ").

□ Turn 1cm ($\frac{3}{8}$ ") on one long edge to

the right side and press (bottom edge of petticoat).

□ Cut a piece of broderie anglaise 73.5cm (29") long and pin it to the right side of the bottom of the petticoat. The lower edge of the insertion should be just above folded edge of petticoat (fig. 3). Tack and stitch along both edges of the



3. Broderie anglaise pinned to right side of petticoat bottom.

insertion, thus enclosing raw edge of petticoat.

□ With right sides together, tack and stitch seam and broderie anglaise in one operation. Neaten turnings together.

□ On the waist edge turn 3mm ($\frac{1}{8}$ ") and then 1.3cm ($\frac{1}{2}$ ") to the wrong side. Tack and stitch close to the first fold, leaving a 2.5cm (1") opening for inserting elastic.

□ Cut a piece of elastic to fit doll's waist, thread it through casing and oversew the ends together securely. Slip stitch the opening.

Knickers

□ Trace off the pattern for the knickers and cut two pieces in lawn on the straight of grain.

□ Cut a piece of broderie anglaise to fit each leg edge, including turnings (four pieces in all).

□ Turn 6mm ($\frac{1}{4}$ ") on one leg edge to right side and press. Attach one of the pieces of broderie anglaise to cover the raw edge as for bottom of petticoat.

□ Repeat with other three leg edges.

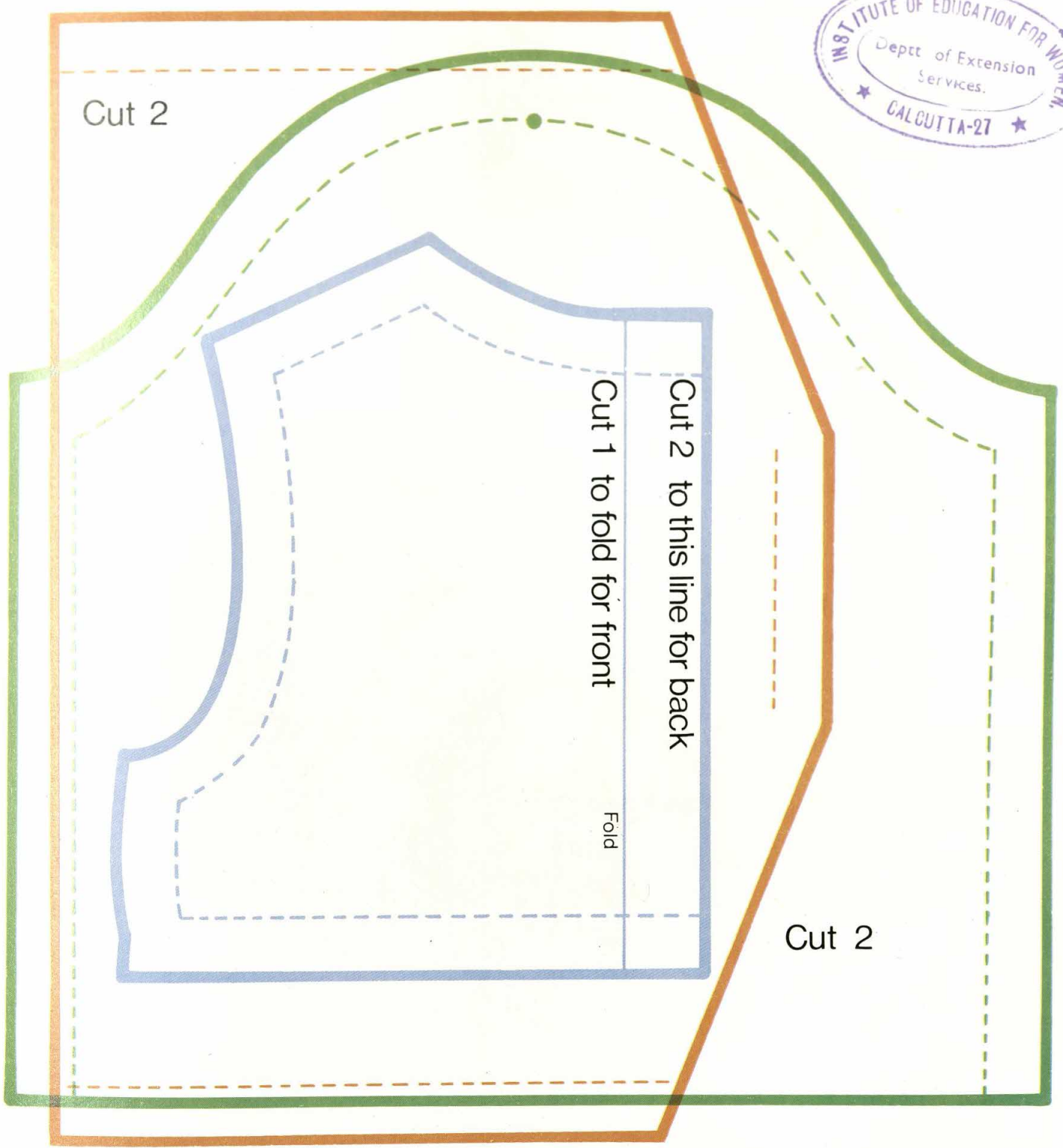
□ With right sides together, tack and stitch the side seams, stitching short ends of broderie anglaise in the same operation. Neaten turnings together.

□ With right sides together, tack and stitch the crotch seam and broderie anglaise. Trim turnings to 6mm ($\frac{1}{4}$ ") and neaten together.

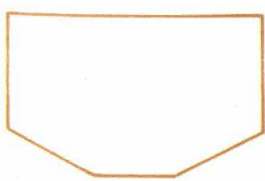
□ Make casing and insert elastic at top of knickers as for petticoat.

□ Turn through to right side.

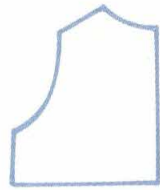
Right: trace pattern for knickers, dress sleeves and bodice and key to pieces. (Skirt and petticoat are straight strips.)



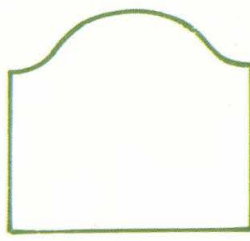
Seam line - - - - -



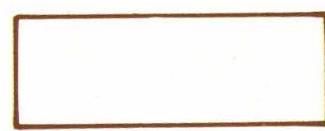
Knickers



Bodice



Dress sleeve



Dress skirt — Cut 1
 73.5cm x 26.5cm
 (29" x 10½")



Petticoat — Cut 1
 73.5cm x 24cm
 (29" x 9½")

Painting designs on glass

Colour —
paint 8



Painting on glass is one way to turn ordinary utensils, bottles and jars into more individual and attractive objects. It is also a means of re-cycling wine bottles, jam-jars and similar throw-away containers which can be converted with very little effort into canisters, vases for flowers, decorative cosmetic jars and ornaments.

Household items like glass ashtrays look very original with a design on the bottom or even covered entirely with paint. Drinking glasses can be personalized and inexpensive glass mixing bowls can be decorated to bring puddings and salads to the most elegant dinner table.

Many simple shapes can be painted freehand on to glass and there are numbers of others which require no ability to draw whatever.

Paint and preparation

When buying paint specify that it is to be used on glass. Craft shops and art supply shops stock transparent and opaque enamel which is designed

especially for this purpose. Normally, this is oil based so you will need to buy white spirit for cleaning up.

Inexpensive water colour brushes are perfectly suitable for this type of work but for especially intricate designs you should use a sable brush.

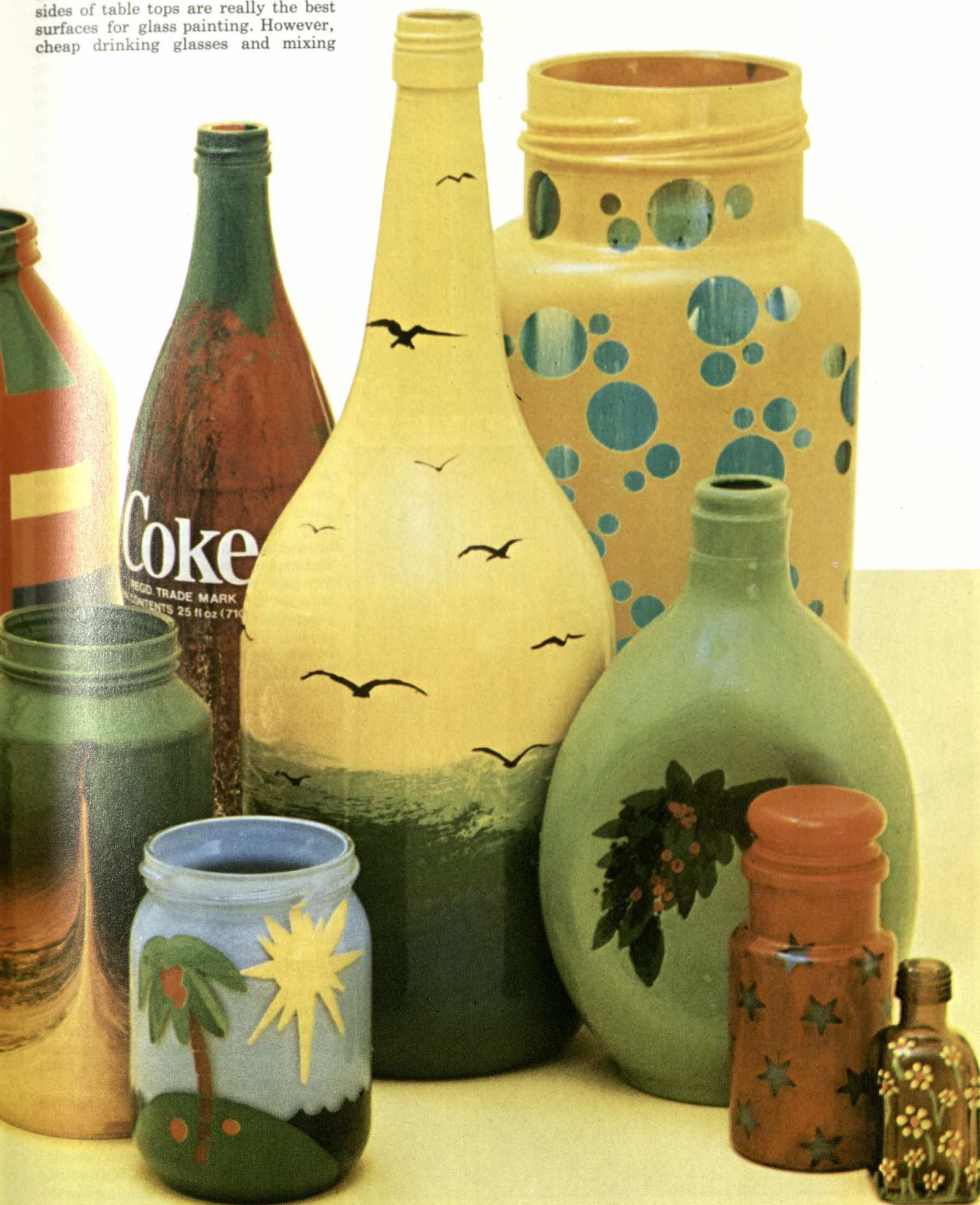
Before painting, always wash bottles and jars thoroughly with white spirit or washing soda to remove all trace of grease, otherwise the paint will not adhere properly to the surface.

Although glass paint is hardwearing,



Old bottles and jars can be re-cycled and drinking glasses and bowls gaily decorated by simple painting methods. These involve rolling containers in paint, using masking tape and stick-on labels and tracing patterns from paper cut-out designs.

surfaces which receive constant washing are unlikely to retain their colour for any length of time so objects such as vases, decorative bottles or undersides of table tops are really the best surfaces for glass painting. However, cheap drinking glasses and mixing



bowls can be quickly decorated on the outside for the fun of it.

Marbled effect

A multi-coloured or 'marbled' effect is easy to get and can be made on the outside or, provided the top is broad enough, the inside of a container.

To marble the outside of a glass container, pour two or three colours on to a piece of card and roll the bottle or

jar in the paint. A wooden dowel or rod inserted in the container will help to roll it.

Allow the container to dry suspended over newspapers by a cord so that the excess paint drips off. This will add to the 'marbled' effect.

Marbling the inside of a container is even easier but remember that you need a fairly wide-mouthed container for the best results. Simply pour the

on the outside, thus combining two techniques.

Tracing

Glass lends itself to this technique quite naturally. You simply tape an image to the inside of the glass and paint it on to the outside by following the lines. This way, colourful scenes can be painted on drinking glasses or handsome silhouettes applied to glass vases.

If the container is too narrow to insert a paper pattern then the outline can be traced on the exterior with a greasy pencil such as a china-graph and filled in. The pencil marks can be rubbed off when the paint is dry.

Lettering is excellent for tracing from inside or out and kitchen canisters can be labelled in this manner.

Stick-on shapes

This is another versatile means of glass decoration.

Self-adhesive labels are available from most office supply shops in the shape of circles, stars and rectangles and larger labels can be cut into any shape you wish.

Arrange the labels on the glass and then paint the glass surface. When the paint is dry, peel the labels off carefully. Stubborn or uneven edges can be evened up with a craft knife.

Examples on previous spread

The tall yellow jar with blue circles was done in this way. The circles represent labels that have been removed. The inside has been painted with transparent blue paint.

Masking tape is useful for a number of designs and is indispensable for making clear, straight lines—a low-tack variety is recommended, especially for taping over a previously painted area.



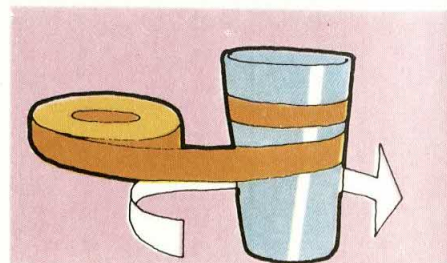
1. Marbling the inside of a container.

paint into it as shown in fig.1 and revolve the container slowly. Pour out any excess paint and allow to dry.

Images may then be painted freehand



Above: leafy lamp is created from painted glass jar shown below.



2. Using masking tape to make lines.

The drinking glasses shown were decorated by masking off the area on either side of the desired stripes (fig. 2) before painting them in. The graduation of the lines shown is another good decorative idea.

The multi-coloured 'hard edge' jar was also painted using masking tape.

Table tops

Plate glass table tops are fascinating surfaces for decoration. Making a back-

gammon board adds a useful dimension, but all sorts of designs using the techniques described above could be employed.

A backgammon or chessboard can cover the entire surface of a small table or only the centre portion of a larger one such as a coffee table. Many shops sell glass-topped tables but if you are having glass cut for a table frame or to cover a table you should have the edges rounded off to take off the sharpness and give a more 'finished' appearance.

The surface which you paint will be the underside of the glass and this will automatically protect it from abrasive cleaners, fluids and scratches. (Remember however that your finished design will be a mirror image of the original drawing.)

To make the backgammon board
66cm (26") x 33cm (13").

You will need:

Graph paper and pencil.

Yellow, blue and red paint (or your own choice).

Brushes.

White spirit.

Low-tack masking tape.

Glass table top and frame or glass topped table.

Razor blade or craft knife.

Old newspapers or sheet.

Use graph paper to enlarge the design in fig.3a. For information on how to enlarge a design in this way see Design know-how chapter 4, page 112.

□ Protect working area with newspapers or old sheet.

□ Place the pattern on to a smooth flat working surface and put the glass on top of the pattern. If the edges are rounded put it bottom side up.

□ Mask off the border with masking tape (fig.3b) and paint inside the tape strips. Allow to dry thoroughly before proceeding further.

□ Remove the tape carefully and clean up any unevenness in the painted lines with a razor blade or craft knife.

□ Mask off the blue triangles (3c) and paint them. When dry, remove the tape with extra care since part of it has been placed over previously painted areas and there is always the danger of it pulling up some of the paint.

□ Mask off the red triangles (fig.3d), paint them and allow to dry before removing the tape.

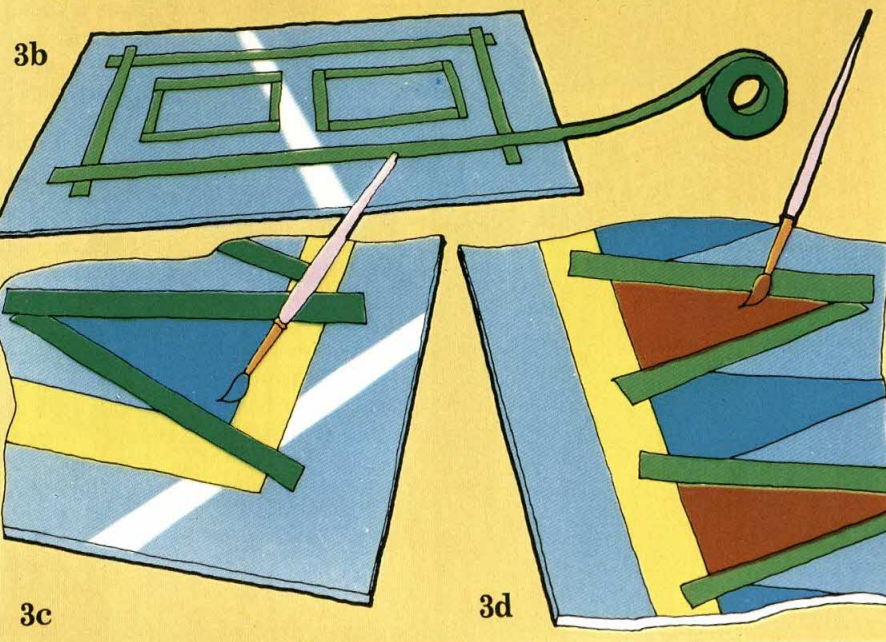
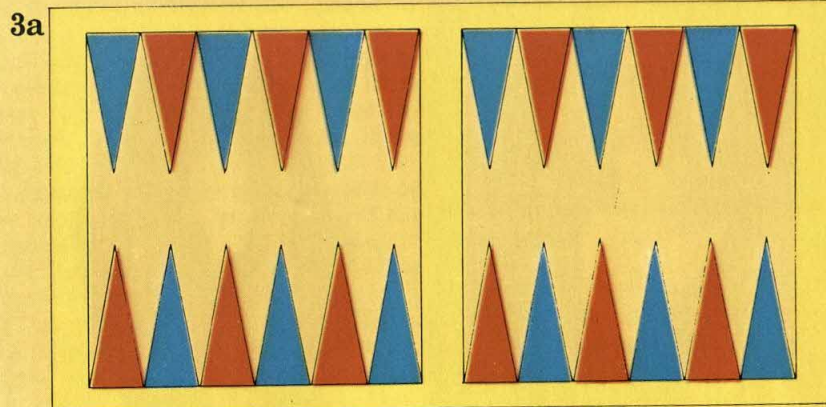
□ Check the surface to make sure all is in order: you can remove odd flecks with a blade and touch up any gaps with a fine brush.

□ Place the glass in position and your table top is complete.



Neil Lorimer

Backgammon board in alternative colour way by Neil Lorimer decorates table.



3a. Pattern for backgammon board. **3b.** shows how to mask off borders on glass. **3c.** and **3d.** indicate use of masking tape to outline each area for painting.

Neil Lorimer

Beginning tablet weaving

Yarn — weaving 13



In Europe, the earliest existing fragments of tablet weave date from the Bronze Age. This ancient craft is a form of warp twined weaving, a method of textile construction that has been practised for many hundreds of years and the origins of which were probably in rope making.

Off the loom

No loom or frame is necessary for tablet

A profusion of tablet woven belts. The top red one is given in this chapter.

weaving as the threads may be tied between any two supports such as a door knob and the arm of an upright chair. To keep the warp threads in sequence, they are threaded through holes in square cards. By turning the cards or tablets the different coloured threads are twisted together and a different shed made.

With this method of weaving, beauti-

Highly individual articles such as the watchstrap can be easily woven using a set of tablets for a loom.

fully patterned braids may be created which can be made into belts, ties, chokers, necklaces and straps or used as decorative trimmings and edges. Only narrow fabrics can be produced but several lengths can be joined together with a flat stitch to make into shoulder bags, cushion covers or even rugs.

Basic techniques

If you take four threads and turn them several times in one direction, they twist around each other and form a spiral rope-like structure (fig.1).

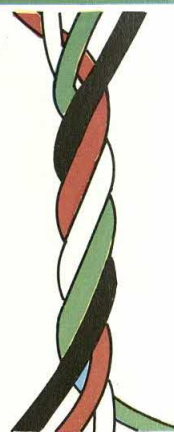
Tablet weaving consists of a number of such ropes, running lengthwise parallel to each other and connected one to the other by the weft thread weaving to and fro (fig.2). Each tablet holds four threads and is responsible for one four-ply rope. The tablets act as a loom and hold the threads in order. They are the means by which the threads are twisted into ropes and enable a number of ropes to be made simultaneously thus producing a fabric.



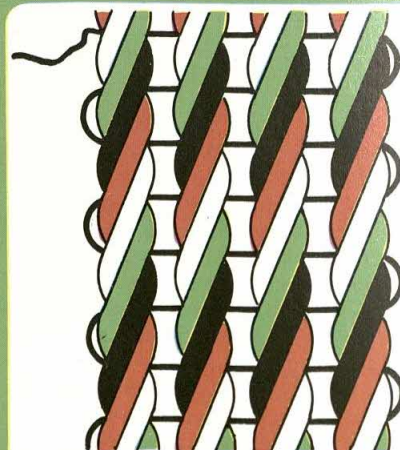
Steve Bicknell



Ray Duns



1. Four threads from each tablet twist together so as to form a spiral rope-like structure.



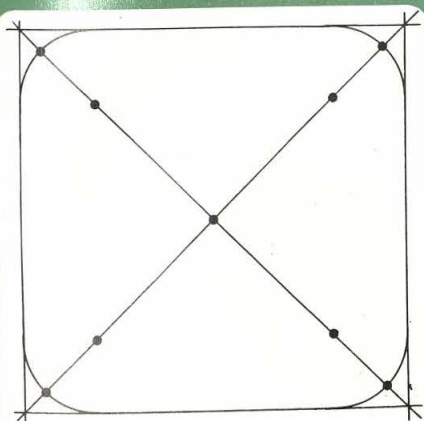
2. Tablet woven fabric is a series of twisted threads joined by weft.

The yarn is threaded through the holes in the tablets and weaving proceeds. Because of the position of the holes, the threads naturally separate into two layers—an upper and a lower layer—forming a shed and allowing the weft thread to pass easily between them. The entire set of tablets is turned through an angle of 90° (one quarter turn of a square tablet) between each pick of weaving. The continual turning of the tablets causes the lengthwise threads to wrap around each other and the rows of closely packed spirals give this type of weaving its characteristic appearance. All the colour is supplied by the warp threads, the weft is hidden except for a very little at the edges.

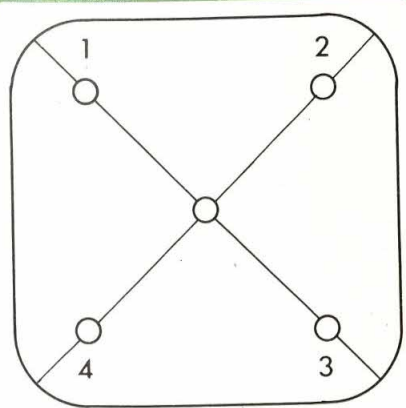
The watchstrap

This decorative watchstrap, 2cm ($\frac{3}{4}$ " wide, can show off the largest or smallest of watches.

You will need:
Fourteen tablets.
Card shuttle.



3a. Draw in diagonals and rounded corners on each square tablet.



3b. Tablets should have a hole in each corner and one in the centre. Rough edges must be smoothed down.

One ball each of black, red, green and white No.5 mercerized cotton.

Chair.

Ruler for beating down the weft.

Strong support such as a hook in the wall, a radiator pipe or a door knob.

Three lengths of cord or strong string not less than 30cm (12") long.

Needle for darning in ends.

To make the tablets and shuttle

Kits with ready-made tablets in plastic are available but it is a simple matter to make your own tablets to begin with.

You will need:

Imperial size sheet of smooth, thick cardboard. Mounting board is ideal and is generally available in art shops. Scissors and sharp knife or scalpel. Pencil and rubber.

Punch or gimlet to make a hole roughly the size of a No.8 (US6) knitting needle. Fine emery paper.

Felt tipped pens in four contrasting colours.

Tracing paper.

□ Each tablet is a 5cm (2") square, rounded at the edges with a hole close to each corner and another hole in the centre.

□ Rule off fourteen 5cm (2") squares on the card as this is the number of tablets required in making the strap.

□ Mark the centres of each square by drawing in diagonal lines and mark 3mm ($\frac{1}{8}$ ") and 13mm ($\frac{1}{2}$ ") in from the corners along these diagonal lines (fig.3a).

□ Sketch around the edge of a coin on the 3mm ($\frac{1}{8}$ ") mark and round off the corners.

□ If you prefer, you can trace the shape of the tablet as shown in fig.3b.

□ Cut out the tablets with care using the knife and ruler for the straight edges and scissors for the rounded corners.

□ Using the 13mm ($\frac{1}{2}$ ") mark, punch holes in each corner and also in the centre of each tablet (fig.3b).

□ Rub down all rough surfaces with a fine emery paper. The sides must be smooth for easy turning in the warp and there must not be any jagged edges to catch and snag the threads.

□ Number the holes from 1 to 4 on one side of each tablet in a clockwise direction, starting in the top left hand corner.

□ It is a help to mark each outside edge of the tablets with a colour so that it is quickly seen if one of the tablets is out of place. Using a felt tipped pen is the easiest method, so apply a different colour on each of the four edges.

□ Finally, make a shuttle to hold the weft yarn by tracing the green shape. Use the same cardboard as for the tablets.

□ Having cut the required number of tablets and the shuttle, lay them aside and prepare the yarns.

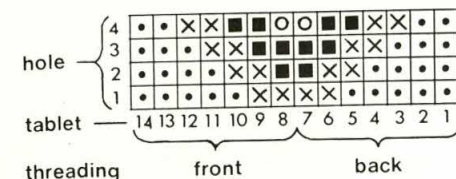
The warp

With 14 tablets, you will need 56 warp threads in all—four threads per tablet. When calculating the length of the warp, allowances have to be made for wastage. Add two lengths of 15cm (6") for the knots at each end, 30cm (12") for the warp which cannot be woven and a further 7.5cm (3") for 'take up' or loss in the actual weaving. In addition, you will need another 7.5cm (3") for finishing off the strap. Therefore, for a 23cm (9") strap you will need threads of 98cm (39") length.

The pattern chart

The pattern chart or draft (fig.4) tells a weaver everything he or she needs to know to make up a design. The number of tablets, the threading direction and the colour of the thread to go through each hole are all contained within the chart. Each square on the graph paper represents a hole and its respective colour thread.

Looking at the pattern chart, you will see that the watchstrap needs 28 black



□ black 28 threads ■ green 10 threads

⊗ red 16 threads ○ white 2 threads

4. The pattern chart for the watchstrap. Pattern charts give you all the information you need including colour sequence for each tablet and the threading direction.

threads, 16 red, 10 green and 2 white.

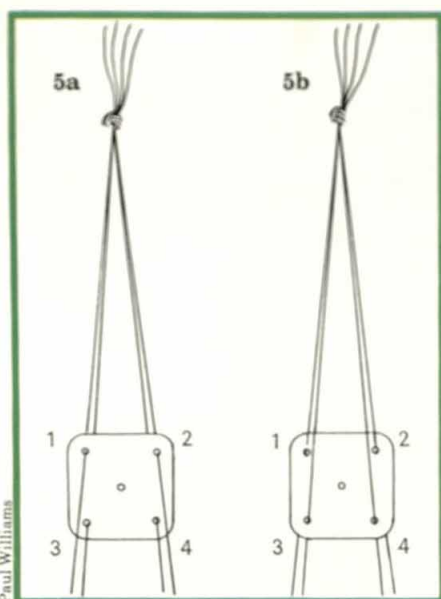
□ Measure off and cut the required threads in each colour and place them in colour groups across a table or hang them over the back of a chair. Yarn tends to cling together and a pull on one thread often dislodges several more which can lead to knots, tangles and broken threads. Therefore, keep all the colours separate and later on keep all the groups of threads well away from the tablets already threaded.

Threading the tablets

□ Number the tablets in pencil from 1 to 14 and pile them in order, face upwards with number 14 on top of the pile.

□ To thread them you will have to keep the pattern chart constantly to hand as a reference.

□ Reading across, you will see that card 14 needs four black threads. Thread one black thread through each



5a. Tablet threaded from the front.

5b. Tablet threaded from the back.

hole working from the front to the back (fig.5a).

□ Pull about 23cm (9") through each hole to the back of the tablet.

□ When each hole has been threaded, place the tablet on a table and even up the four threads.

□ Knot the four ends together at the back of the tablet about 5cm (2") from the cut ends.

□ Thread tablet 13 following the colour chart in the same manner (four blacks). Place the tablet on top of tablet 14 so that the numbered holes match—1 on 1, 2 on 2 etc.

□ Continue threading the tablets following the chart until tablet 8 has been completed and laid on top of the pile on the table.

Threading back to front

Series of tablets are threaded in alternate directions, from front to back or from back to front (figs.5a and 5b). This ensures a clear, even braid and prevents the completed braid from curling up around its length.

In the watchstrap, half of the tablets are threaded from the front and half from the back. This is shown in the pattern chart.

□ Thread tablets 7 to 1 from the back (fig.5b) knotting the threads at the front.

□ When all the tablets have been threaded and stacked, number 1 should be on the top of the pile facing upwards. Check that all the holes are in the correct position with hole 1 in tablet 1 on top of hole 1 in tablet 2 and so on down the pile to number 14.

Preparing the threaded tablets

□ Tie entire set of tablets together by

passing a cord through the centre hole in the pile and tying the ends of the cord securely on the outside edge of the parcel of tablets (fig.6).

□ Even up all the knotted ends and tie them together. This is done by binding another cord around all the warp threads just below the bunch of knots and tying it firmly so that none of the knots can slip (fig.7).

□ Tie the ends of this securing cord to a strong support such as a door.

□ Stretch the warp gently until it is taut and evenly tensioned.

□ Ease the tablets along the warp until they are about 30cm (12") from the unknotted ends. If there are any twists or tangles, use your fingers as a comb and gently pull them through the threads.

□ When the threads are straight and tensioned, knot all the ends together, bind another cord around the warp above the knot and tie it to the weaver's chair.

□ The shuttle carries the weft thread through the warp to form a woven fabric. Wind the shuttle evenly with black thread and place it ready for use.

Weaving

As with all forms of weaving, it is very important that the warp threads are kept taut and evenly tensioned.

With one end of the warp attached to a strong support and the other attached to a chair, the tension on the warp threads can be adjusted by moving the chair.

Take up a comfortable position with the warp directly in front as in the photograph. The marked face of the tablets should be facing to the right.

When the tension is correct, untie the centre string that is securing the parcel of tablets. It is immediately apparent that the warp is divided into two layers with two threads from each tablet in the upper layer and two in the lower. This forms the shed (figs.8a and 8b).

Weaving now proceeds by turning the entire set of tablets forwards or backwards through a series of quarter turns. The shuttle carrying the weft yarn travels through the shed after each quarter turn.

Weaving the watchstrap

□ Before starting to weave, check the tension and make sure that the warp is divided into two layers. Hole 1 should be uppermost but furthest away.

□ Insert the weft in the shed nearest you, allowing about 10cm (4") to hang down. This end will be darned in when the weaving is finished.

□ Turn all the tablets one quarter turn (90°) towards you. Hole 1 will now be uppermost and nearest the weaver (fig.8a).

□ Pass the weft through the new shed

and press it down firmly. Use the edge of a ruler as a beater.

□ After each turn, you should check that the shed is clear and that each tablet has turned. If the shed is not clear, gently slide the tablets up and down the warp or ease the tablets apart and let them fall back into place. Once turned, the tablets will remain in place.

□ Turn the tablets another quarter turn towards you and pass the weft through the new shed. Beat it down.

□ Repeat this turning action twice more, passing the weft through the shed after each turn. Hole 1 will now be uppermost but furthest away from the weaver, ie in the original position.

□ The first half of the pattern unit is complete after these four turns.

Completing the pattern

□ To weave the second half of the pattern unit, make four turns backwards away from you, inserting the weft after each turn (fig.8b).

□ The pattern unit is thus completed in eight turns, four forward and four backward.

□ After a little practice it becomes easier to maintain a steady rhythm of turning, inserting the weft and beating down.

□ Weave with four forward turns and four backward turns until the weaving measures approximately 7.5cm (3") longer than the required length of strap. This additional length will be needed for finishing off.

To finish the watchstrap

□ Cut the weft yarn about 10cm (4") away from the weaving. Darn in the end and finally trim.

□ Darn the starting end of the weft into the fabric.

□ Cut the warp at each end, about 13mm ($\frac{1}{2}$ ") away from the weaving.

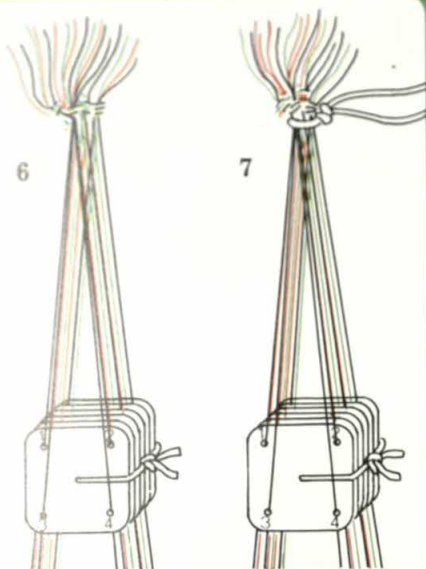
□ Thread the braid through the strap bars of the watch and at one end attach the buckle by folding the cut ends of the weaving and making a hem in the usual way over the bar of the buckle.

□ Finish off the other end with either a straight hem or by forming a point. To make a point, fold the fabric in half widthwise so that the right side is inside the fold and backstitch on the outside along the last weft thread. The ends will be secured by the backstitching.

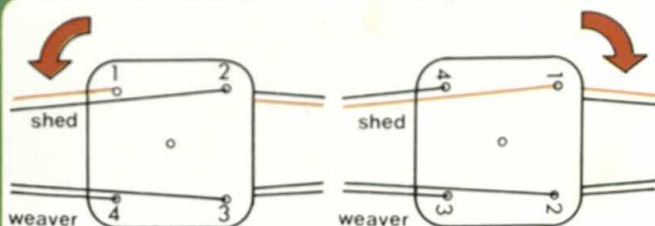
Trim ends, turn right side out and press out the pointed end.

□ Keep the tablets as they can be used successfully again and again.

In tablet weaving, the tension of the threads is achieved by stretching them between a strong support (the door handle) and a chair. The tablets hold the threads in order and the weft is passed through the shed after each turn of the tablets.



6. Secure your tablets by passing a thread through the centre hole.
7. Bind the ends with a cord.



8a. After one turn of the tablets forwards, Hole 1 is uppermost and nearest the weaver.

8b. Starting position for turning backwards away from the weaver. Hole 1 is uppermost but furthest away.

To make the belt

You may like to attempt the belt as your second project. The strap pattern has been modified slightly by the introduction of another area of colour.

You will need:

- 20 tablets.
- Card shuttle.
- One ball each of red, black, white and green No.5 mercerized cotton.
- Chair and strong support.
- Three lengths of cord or strong string not less than 30cm (12") long.
- Make an extra six tablets as described above and label them from 15 to 20.
- Follow the pattern chart (fig.9) for details of threading up. For a belt 90cm (36") long you will need a warp of 165cm (66"). This gives you an extra 7.5cm (3") for take up over the longer area.
- Finish off the belt with a three strand plait at each end. See Weaving chapter 1, page 10 for details of making the plait.

The belt is a variation on the watchstrap pattern. Extra warp will obviously be needed and you will also need six extra tablets.

9. The pattern chart for the belt gives you all the information you will need. Refer to the instructions for the watchstrap as a guide.

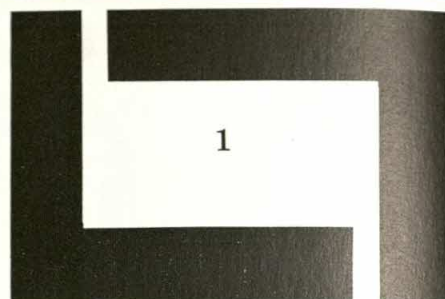
- black
- green
- ⊗ red
- white

hole	4	3	2	1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
tablet	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
threading	front												back											



How to mask a picture

Design
know-how 41



In the last chapter the principles of framing were discussed: the balance of picture, mount, frame and surrounding wall. But, you may be wondering, will the picture look right when it is framed, and what can be done if one only wants to use part of a picture? How can one tell beforehand whether it is worth framing?

The trick the professionals use is to make a very simple 'mask' which blocks out the surrounding area and enables you to see exactly what your picture, piece of cloth or photograph looks like on its own, and what it will look like when it is given a permanent frame.

This is not a mask in the usual sense but two L-shaped pieces of black card which can be manoeuvred together or apart to enclose a smaller or larger area (fig.1). The strips of card make an effective, adaptable frame allowing you to concentrate on the picture, or divide it satisfactorily.

A mask

The measurements given below are for a small mask. If you need a larger mask just increase the proportions.

You will need:

Thin black card, 12.75cm x 11.5cm (5"x4½").

Pencil, ruler, protractor, scissors.

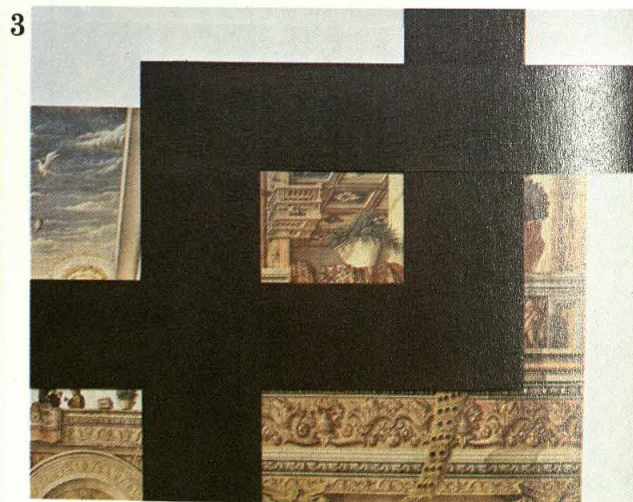
Cut out two L-shapes from black card. These will give you an adjustable mask.

□ Mark out the card with pencil and using the protractor for the right angles.

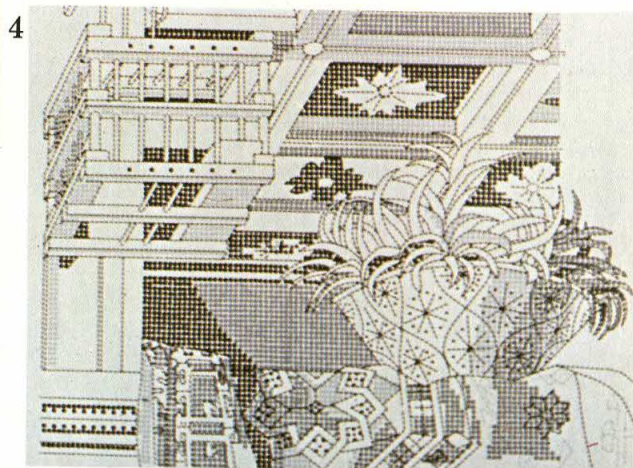
□ Cut out two L-shapes. The mask is ready to use.

Masking

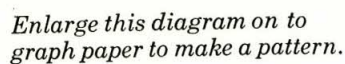
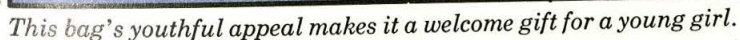
Place the mask over the chosen picture and move it in and out until you have enclosed the part of the picture which works best. Try a small area then a larger one, move the mask to one side of the picture then the other. Look at all the enclosed areas and choose the most satisfactory one (figs.2, 3, 4).



Left: Crivelli's Annunciation. Above: detail framed with L-shapes. Below: detail interpreted in a silk screen print, Crivelli's Room II, by Gillian Ayres.



Alasdair Ogilvie



Stitch press studs in upper corners of bag front and each top corner on wrong side of roof 2.5cm (1") from edge.

Filling and retouching broken china

Clay 26



The ceramic restorer frequently has to undertake a repair job that is more than a simple break.

A piece of the ceramic may be chipped off or a small fragment may be lost, and this chapter deals with filling in and repairing a missing piece of this sort.

You will need:

Tools. The previous chapter deals with the range of tools required for most basic repair jobs, including fillings.

Materials. The materials required for fillings depend on the body of the ceramic object you are working on.

In the case of harder, non-porous ceramics such as porcelain, the epoxy resin adhesive Araldite (either the AY103 or the standard two-tube variety) is used in combination with kaolin powder and titanium dioxide white pigment.

Earthenwares are usually filled with a cellulose filler such as Polyfilla, either with or without dry pigment added to provide a base colour similar to that of the body.

To fill a porcelain object

□ Prepare a small quantity of epoxy resin adhesive according to manufacturer's instructions on a tile or sheet of glass.

□ Use a spatula to grind enough titanium dioxide pigment into the resin to provide a white base. Put a little of this mixture on one side. Add sufficient kaolin powder to the remainder to achieve a putty-like consistency. This should be firm enough to roll in the fingers without being sticky.

Adding pigment. It is sometimes useful to add a little dry artists' pigment to the filling to achieve a colour match with the glaze of the object, but it must be remembered that the Araldite will discolour in a relatively short time, so however perfect the match is the filling should always be retouched as well, as described later in this chapter.

Colouring the filling can, however, be most useful in cases where the body of the ceramic is, say, a dark grey and the glaze is very transparent. Having the base colour already in the filling can make the retouching process a little easier.

If you do use pigment, it should be added to the Araldite before the kaolin powder but care should be taken not to add too much as, once the kaolin is mixed in, the tone darkens considerably. Practice will make your judgment more accurate.

□ In cases where the area to be filled is fairly large, apply a little of the Araldite without the kaolin, which you have put on one side, to the break



1. With a piece of plasticine as a backing, press the filling into place with a metal spatula.

2. Use a file to rub down excess filling until the surface is level with the surrounding surface of the dish.



edges of the ceramic. The purpose of this is to ensure a good bond between the filler and the ceramic.

□ The Araldite putty is then firmly pushed into the cavity or missing area with a metal spatula.

Supporting the filling. Should the missing area be on the rim of a plate or bowl, strips of sticky tape can be used to provide the necessary support. The tape is stretched across the underside of the rim and if a double layer is used a good foundation will be provided on which to press the filler. The tape can easily be pulled away once the filling has set hard.

□ Plasticine can be used as an alternative to tape for larger missing areas. Roll it out flat to make an area large enough to cover the aperture and to overlap on to the ceramic (fig.1). If the area to which the filler is to be applied is lightly dusted with French chalk this will ensure an easy separation.

Making a mould. Plasticine can also be very useful for making a press mould where the missing area is either fluted or has a slightly raised pattern.

□ Roll out the plasticine slightly so that it remains thick enough to hold its shape, and then press it on to a corresponding area of the ceramic so that the pattern will match up with the missing piece. This area should also be dampened with water or dusted with French chalk to prevent the plasticine from sticking.

□ Carefully pull the plasticine away and place it in position over the missing area, pressing the outer edges firmly down on to the surrounding glaze so that the whole piece is held securely in position.

□ Lightly paint the mould with Araldite plus titanium dioxide before applying the putty. This ensures that the impressed pattern is picked up by the filler. Once the Araldite has set hard, the plasticine can be pulled away.

Small fillings. In the case of smaller fillings, such as chips found along break edges, provided the filler is pressed down well with a metal spatula there should be no problem of adhesion.

It is usually better fractionally to overfill than to underfill, but in all cases accuracy at this stage will save extra work later. Rubbing down is slow work and apart from this, grossly overfilled small chips could be pulled out by the friction set up by excessive rubbing down.

□ Once the filler has been pressed down into the cavity or missing area, the surface can be smoothed with a soft rag or a metal spatula dipped in methylated spirits. It is very unlikely that you will achieve a perfect filling in one operation, and a second application to fill in the pin holes and discrepancies is nearly always necessary.



3. Rub down with abrasive paper, without scratching surrounding glaze.

4. For a smooth finish, rub down with a fine quality abrasive paper.



To fill rivet holes, mix the Araldite putty to a stiff consistency, and use a spatula to pack it into each hole a little at a time so that the air is expelled. The finishing-off of a filling is very important. No discrepancies can be afforded, however minute, as they will show up under retouch. It is possible to spend many hours achieving a perfect surface to a filling. The filling should be allowed to settle for 24 hours before it is filed down.

To file down fillings. Depending on the amount of excess filler, the first step is to use a file to take the surface down. Use a fairly coarse grade of file initially, and move on to a finer one as the surface becomes smoother (fig.2).

□ Take care not to allow the grooves

of the file to work below the level of the surrounding glaze.

□ After the bulk of the surplus filling has been removed use abrasive papers, working from a medium-coarse down to a very fine, to achieve an absolutely smooth surface. Silicon carbide papers are the best as they can be used wet or dry and are available in a wide range of grades (figs. 3 and 4).

The paper should be used in small pieces, folded so that an edge or corner can be used, which gives more control of the rubbing-down action. Great care must be taken not to allow the paper to come into contact with the area surrounding the filling, as the glaze will scratch easily and this kind of damage cannot be remedied.



5. When newly filled area is completely smooth, use chrome polish to give a suitable retouching surface.



6. The new surface must be perfect—retouching emphasizes discrepancies rather than concealing them.

□ A grade of paper as fine as 1000 or 1200 will be required for a really smooth finish, and polishing with a chrome polish such as Solvol Autosol will provide the final surface for retouching (fig.5). Surface discrepancies can be shown up by viewing it under a harsh oblique light.

To fill an earthenware object

The Araldite filling is used for all hard-bodied ceramics. It can also be used for an earthenware object if a really durable filling is required; however, Araldite can cause staining if it is drawn into a porous earthenware body, and should therefore be used in a fairly tacky state to prevent this from happening. Common sense must be your guide when making a decision as to which filling to use.

In general on more porous bodies it is wiser to use a cellulose filler such as Polyfilla for the basic filling material. Polyfilla makes a very strong filling if mixed according to the manufacturer's instructions to a stiff, rather than sticky, consistency and it is very easy to handle. It contains its own adhesive and therefore bonds very strongly to the ceramic surface, provided that good contact is made over the entire surface of the surrounding edges of the area to be filled.

It is also advisable, as in the case of Araldite filling, to smear some of the

filler along the break edges before actually filling in the area. Sticky tape can again be used as a support framework, but if the area is not too large the Polyfilla will hold its shape well without a backing.

The application process is the same as for Araldite filling. Try to be as accurate as possible, but you will find that Polyfilla is not so difficult to rub down. A cellulose spackle such as Polyfilla can be used as a final layer in the second filling stage, thus providing a surface which is excellent for retouching.

If a coloured filling is required, dry pigment should be added to the cellulose filler before it is mixed with water. Remember that the filler will dry to look considerably lighter than it appears when wet, so make allowances for this in adding the pigment.

Retouching

Retouching is, perhaps, the most difficult process in ceramic restoration, and it involves colouring the surface of the filling to look the same as the surrounding ceramic. The success of a retouch depends as much on the standard of the bonding and filling operations, however, as on the skill of the restorer in painting.

Retouching (fig.6) emphasizes discrepancies rather than cover them up. There is no need always to aim for a perfect retouch, however, as quite

9. Practice and experience enable





Mix the colour by grinding artists' pigment into polyurethane varnish.



8. Use a very fine sable brush to paint the filled area, taking time to reproduce the original design as neatly as possible.

restorer to achieve impressive results.



often one that is simply acceptable to the eye is more successful than a full spraying job that covers up most of the ceramic.

You will need a full range of artists' dry pigments, and a medium such as polyurethane varnish. The best polyurethane to use is PU.11, made by Furniglas, but if this is difficult to obtain Rustins is a good alternative. The solvent for Rustins is white spirit, and for PU.11 cellulose thinners. You will also need fine sable brushes of a size suitable for the job in hand. Piece of white Formica for palette.

The retouching process. All surfaces and equipment must be dust- and dirt-free, as the smallest speck of dust can ruin hours of work.

□ Use a piece of white Formica as a palette for mixing your colours. Begin by thoroughly grinding the pigment in polyurethane varnish (fig.7) with a spatula, thinning it with solvent as necessary, so that the retouch material will brush on easily. Be careful not to overload the varnish with pigment or to over-thin it with solvent or it will take on a dull finish and look very heavy.

□ Using a fine sable paint brush, begin to paint the filled area (fig.8). Limit the painting only to the area that has been filled, and do not overlap too far on to the surrounding glaze. Feather the edges of the retouching slightly so that they merge with the surrounding glaze.

□ It is better to apply the paint in layers, gradually building up the required density of colour, than to try to achieve success in one application.

□ Each coat should be allowed at least 24 hours to dry and harden before the next one is added.

□ The polyurethane varnish has a gloss finish within itself, so a final clear glaze is not necessary, but a chrome polish such as Solvol Autosol can be used to give the retouch a final polish.

□ Should a matt finish be required, a matting agent can be added to the retouch medium either before or after the pigment is ground in, or use a matt polyurethane varnish.

The success of the retouch depends on the skills of the restorer both in applying the paint and in knowing how to mix and match colours to achieve the required result (fig.9).

It is a technique that can only be mastered with practice, so it is worth spending a little time in getting to know the individual pigments. Find out how strong they are, how well they disperse in the medium and, most of all, which combinations will give the correct colour match.

Also some pigments are far more transparent than others, and an awareness of all these points will make the process of retouching much easier and the final result will be more pleasing and satisfactory.

Fairest mirrors of them all

Colour —
paint 9



Mirrors are used by interior designers to emphasize space, to create atmosphere and to enhance and brighten dull corners of a room. They also make decorative, wipe-clean surfaces for tables, place and cocktail mats and borders round baths and basins which get spattered with water.

An ingenious way to ornament inexpensive mirrors and revamp old ones is to add colour to them. Any chinks or flaws can be skilfully camouflaged.

Paint. Most hobby shops stock transparent and opaque colours specially designed for painting on glass. These have considerable adhesive powers and are resistant to chipping and peeling, but painted glass surfaces should always be cleaned with care by wiping with a cloth and should not be scrubbed.

Mirror glass. DIY shops sell sheet mirror glass and mirror mosaic squares. Sheet mirror should be bought no thinner than 4mm ($\frac{1}{8}$ ") unless it is mounted on a solid backing. Most mirror suppliers will round the edges of glass on request to remove sharp edges. It is also possible to have a bevelled border round a mirror to give a finished look to the glass, but this is rather expensive.

Mirror mosaic is normally available in squares, but oblong and other shapes are available too. The mosaic is bought in sheets on which many squares are mounted together. These must be pulled off and re-mounted for use individually.

Moorish mosaic mirror

This exotic and colourful design will

look best if placed in an area which receives direct sunlight, as the mosaics reflect a coloured light around the room.

The small squares decorating the sheet mirror are each 2.5cm (1") square. You can adapt the size of the design but you must be sure it works out so that the squares will fit evenly into the given areas.

To make the mirror shown you will need:

200 mosaic squares 2.5cm (1") square.

A sheet of mirror glass 35cm x 45cm (14"x18") and 3mm-6mm ($\frac{1}{8}$ "- $\frac{1}{4}$ ") thick. Chipboard 19mm ($\frac{3}{4}$ ") thick and the same dimensions as the mirror glass.

Rubber based glue.

Paint brush.

Transparent glass paint in blue, yellow, red, (the purple and green shades can be made by mixing or you can buy them ready-mixed).

Attachments for hanging the mirror.

To colour the mosaic squares experiment first on a few squares to test colour and strength. The purple and sea-green shades can be made by mixing red and blue and blue and green respectively.

When you are happy with the test samples both in colouring and degree of transparency proceed to paint the



Exotic Moorish-style mosaic mirror is made by painting glass squares and sticking them to sheet mirror glass. All designs shown are by Neil Lorimer.



A raincloud through which even the sun can be reflected.



Painted glass cocktail mats with reflective surfaces of silver foil.

other squares, about 20 or 30 in each colour. The squares can be painted while still on the backing sheets and then removed when dry. Any remaining fibrous material must also be removed. Leave a few squares unpainted to give the finished design variety.

Preparing the mirror glass. Before you attach the sheet mirror to the chipboard backing you must attach devices for hanging the mirror. When these have been secured to the back of the board stick the glass and chipboard together (fig.1).

Stick the squares one by one to the front of the sheet mirror by applying a dab of glue to each one and pressing it down according to the design shown. Lay the tiles very close together. It does not matter if a little glue protrudes beyond a square since the next one will cover it. Otherwise wipe with a damp cloth.

When the squares in front have had time to set, apply a row around the side edges of the mirror to finish. Polish with a slightly damp cloth and the mirror is ready to mount on the wall.

Cloud mirror

A completely different technique has been used for the cloud mirror and by following the instructions given you can reproduce it or create your own design. If you decide on the latter, choose a pattern which leaves a fair expanse of mirror uncovered so that it will remain functional. Old mirrors are perfectly suitable for this technique, too.

To make the design outline. Cover the surface of the mirror with strips of masking tape.

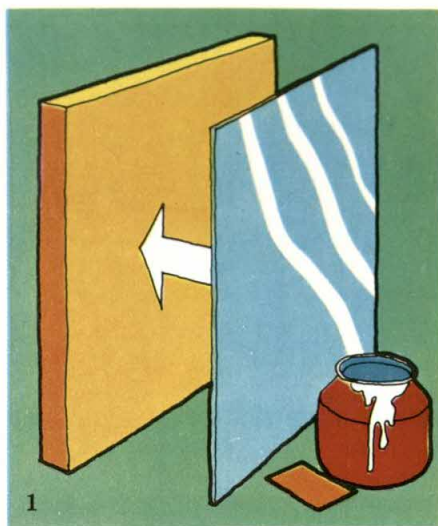
The design shown was made by placing different-sized cups and lids—anything that will make a rounded edge would do—on the tape surface and tracing round them with a pencil to make a cloud outline. A ruler was used to make the rain stripes.

When the design has been outlined cut round the pencil marks with a sharp blade, taking care not to scratch the glass. For straight lines such as the rain stripes it is easier to draw the blade along a steel ruler.

Remove the tape on the areas surrounding the design, leaving the shape of the design (the area not to be painted) still covered. In the case of the rain stripes every other stripe is peeled off.

To paint. The exposed areas can then be sprayed with aerosol paint in any colour and when dry the remaining tape removed, leaving the central shape clear and reflective.

It may be necessary to clean some of the edges with a razor blade, to get a neat finish if the paint has seeped beneath the tape in any place.

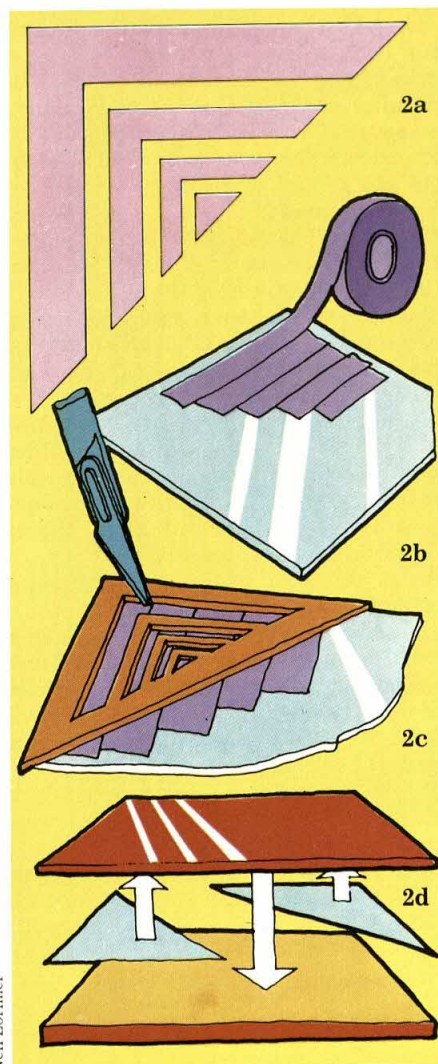


1. Sheet mirror reinforced by chipboard.

2a. (below) pattern for reflective surface of cocktail mats can be enlarged and traced on surface or used to make a cardboard template.

2b. Masking tape is applied to underside of glass and the pattern is then cut into the tape as in fig.2c.

2d. Reflective silver foil is sandwiched between painted glass and backing.



Reflecting cocktail mats

Before the technology of making mirrors was properly understood, people created shiny surfaces in a variety of ways. Today silver paper, foil and similar materials provide comparable effects. The cocktail mats were made using an improvised mirror of plastic foil as the reflective surface.

To make 4 mats you will need:

4 11cm (4½") squares of 4mm (⅜") plate glass with the edges rounded off.

Reflective material such as Melinex; enough to cover glass surfaces.

4 pieces of thin plywood cut to same measurements as glass.

Masking tape.

Glass paint.

Heavy card or other paper for template.

Felt (optional) for backing.

Sharp craft knife.

□ Enlarge the pattern given (fig.2a) so that the outside length measures 5cm (2") and trace it on to paper. (In fig.2c the purple areas represent the pattern lines and, if you prefer, a heavy card template like the one shown can be used.)

□ On the underside or unbevelled side of the mats, cover the opposite corners on each with overlapping strips of masking tape so that at least an area slightly larger than the pattern is covered (fig.2b).

□ Place the pattern over the tape so that it is centred correctly and the outside of the first line of the design is about 4mm (¼") from the outside edge of the glass. Then, with a sharp blade cut round the edges of the pattern (2c). If you are using a paper pattern simply mark off the areas of the pattern with a pencil and cut by placing a ruler along the line as you go.

□ When the corners have been cut out remove all the tape except that of the design and paint over the entire under surface of each mat.

□ Paint the baseboards as well and allow to dry: paint both sides and edges unless you intend to apply a felt backing or feel that the layer of paint on the glass is sufficient.

□ Carefully remove the rest of the tape. Be sure that the paint seals are broken with a blade first so that you do not pull up any of the paint with the tape. Clean any uneven edges of the design with a knife. The pattern areas are now transparent.

□ Cut out 8 triangles of foil, each large enough to cover the design area and tape them in place over the paint with bits of masking tape so that all the transparent or unpainted areas become reflective.

□ Spread a thin layer of adhesive on the undersurface of the glass, including the foil and masking tape and spread another layer on the baseboards. Then stick them together (fig.2d).

□ Felt may be stuck to the back.

The decorative art of quilling

Paper 30



Although papers other than carnival streamers and special quilling paper will require measuring and cutting into strips, the opportunity to use a wider choice of textures and colours is very inviting.

Combination papers are unsuitable: the two layers tend to argue in the process of quilling, but almost any flat single paper (excluding crepe) can be used successfully. The weight of the paper is immaterial providing it can be rolled—very heavy papers may require a dab of glue between coils to retain the spiral pattern.

Sheet acetate, such as Melinex, can be used and is an exciting material for this craft. If you find it difficult to glue acetate quills, secure them by stapling instead, but be careful to locate the staples so that they will not spoil the effect of the final design.

Parcel ribbon, the decorative sort that sticks to itself when wet, is another quite different material that can be used for a variation of quilling.

Unlike conventional quilling, decorative ribbon is held in shape by sticking. Ring the ribbon round your forefinger, licking the end of the ribbon to secure the loop. Then make a second ring, a little larger than the first, sticking it to the inner ring at the same point as before. Add subsequent rings, increasing their size a little each turn and sticking as before.

Strips of woodshavings can sometimes be bought from DIY shops or craft shops. Once they have been soaked in water, these become pliable and can be used for quilling. Follow the method used for decorative ribbon, using a dab of glue to hold each coil to the next.

Ornate Victorian quilling

During the Victorian period in England, the art of quilling reached the heights of popularity—a pastime practised by every young lady of leisure, who favoured designs involving numerous loose coil quills tightly packed into areas outlined by strips of coloured paper.

This taste for the intricate, combined with a certain snobbishness, led to the popularity of quilled shield decorations.

At that period the shields were usually framed and hung as pictures, mounted on to fire screens or used to decorate furniture panels. But they could equally well be used to make decorative and unusual tray or table tops. Protect the paper design by setting in a recessed frame and cover with a sheet of glass or acrylic such as Perspex.

The blue and gold shield

This shield is purely imaginary although it incorporates patterns frequently included in authentic heraldry (the crown, scroll, inverted V-shape called a chevron, and diamond shapes known as lozenges). A stylized design, such as this shield, with its simple geometric shapes is easier to quill than one with intricate shapes (such as a fleur de lys) but, if you are interested in genuine coats of arms, the Heraldry Society in Great Britain will help.

This design is made up to 45cm x 61cm (18"x24").

You will need:

A sheet of thick cardboard or painted chipboard measuring 45cm x 61cm (18"x24") for mounting the quilling.

Sheets of cover paper, each measuring 50cm x 85cm (20½"x33") and about the thickness of thin cartridge paper: one white, two yellow, one blue.

Silver and gilt paint, and fine brushes.

A quilling stick or piece of dowelling about 10cm (4") long and 2cm (¾") wide with a 1.5cm (¾") slit cut into one end.

A quilling work board and tracing paper for pattern (optional).

Paper adhesive, pencil, scissors and a ruler.

□ If using a work board, first make a pattern on tracing paper, outlining the motifs which make up the whole design. (Preparing a work board and pattern are described in the previous chapter.)

□ Cut the sheets of cover paper into strips, each measuring 1cm (¼") wide by 50cm (20½") long.

□ Reserve fifteen strips of white paper for making the outlines, and roll all remaining strips into loose coil quills (see Paper chapter 29, page 1122) with diameters of about 2cm (¾").

□ Now glue blue and white quills to each other to make up the chevron motif. Use the top central blue quill as

the point from which to start.

□ Either make up the motif on your work board (sticking each quill to its neighbours at points of contact and following the pattern you have made) then glue the base of the coils, transfer and stick the motif into position on the mounting board.

□ Or stick the chevron quills directly on to the mounting board—but do try to avoid making many guide marks on the board as this will spoil the appearance of the finished work. One vertical line drawn down the centre of the board should suffice as your reference point throughout. Stick a blue quill on the vertical line at a point 33cm (13") from the bottom edge of the board. This quill is the centre top point of the chevron, around which you can now glue 37 more blue quills and seven white ones to complete the motif.

□ Glue two strips of white paper round the chevron motif to contain it.

□ Next assemble the gold and white diamond shapes that go below the chevron, using 40 yellow quills and nine white quills as shown in the picture. (This and the next motif can be assembled on the work board or glued direct on to the mounting board.) Contain the diamond motif with a strip of white paper.

□ Make up the large motif (containing two white diamond shapes) that goes in the upper part of the shield, using 106 yellow quills and nine white ones for each of the diamonds. Contain the diamond shapes as before.

□ Make the border by gluing a strip of white paper all round the shield shape. Add a row of white quills and surround with another strip of white paper. Then surround all but the top of the shield with a row of blue quills. (All this must be done directly on to the mounting board—don't attempt to assemble it first on the work board.)

□ Make the crown, following the design in the photograph, with 16 white quills and an outline strip of white paper folded to make peaks.

□ Finally make a scroll with a curved row of 27 white quills outlined above and below with strips of white paper.

□ When the glue is completely dry and the quills all firmly stuck to the board, carefully paint the top edge of all the yellow quills and the white crown quills with gold paint. Use silver for the white quills in the chevron and in the diamond motifs.

Free-standing 3-D designs

Fairly heavy papers can be quilled to produce free-standing 3-dimensional designs—abstract forms of paper sculpture. Using strips of paper of varying widths (widest at the bottom and tapering at the top) will help stabilize the design and adds to its interest.



Left: 3-D design uses cover paper.
Below: quilled shield makes an unusual
and colourful wall decoration.
Above: shield detail shows loose coils
contained by strips of quilling paper.



Heavy cover paper in four different colours was used for the design on the previous page. It was built up layer by layer using the work board technique and then transferred on to a panel of insulation cork roughly crumbled round the edges to echo the outlines of the paper design.

An indication of the strength and stability built up through several layers of wide quills in thick paper is demonstrated by the fact that the ivory arc of quills (made of a lighter weight paper) are suspended above the rest of the design and are connected to it at three contact points only—see photograph on previous page.

Light reflections

Light shining through the spiral shapes of paper filigree creates interesting effects. Quilling decorations can look very handsome around a lampshade, for example, and a quilled border framing a mirror is even more exciting. The image is repeated in the glass of course and, if a material such as Melinex is used for quilling, the reflection is shimmering.

Silver Melinex is a filmy material with a glossy polished finish that reflects light well. It is pliable and can be cut with scissors. Melinex comes in rolls (usually about 48cm (19") wide). It can be bought by the metre (yard) from most

stationers and some art and craft shops. Different weights are available: medium-lightweight is usually best for quilling.

Silver Melinex mirror frame

You will need:

1 mirror glass 76cm x 41cm (30"x17") with bevelled edges.

1 metre (39") medium lightweight silver Melinex.

Small stapler.

Ruler.

Scissors.

Clear general purpose glue.

□ Cut the Melinex into 100 strips. 1cm (4") wide across the width of the roll.

□ Roll each strip round your forefinger five times, making a slightly larger coil at each turn. Staple the coils together at one point, leaving the remaining strip as a tail piece (fig.1).

□ Join the tail end of one quill to the centre of the next quill with a tiny spot of glue, placing the quills on alternate sides of the joining strip (fig.2). The distance between each quill should be about 6cm (2½").

□ Join quills in groups of eight, then curve the joining strip into the pattern shown in fig.3.

□ Repeat this process until all the quills have been used up. The last group will consist of four quills only, forming the first half of the pattern.

□ Lay the quills round the mirror and, if necessary, adjust a curve here and there to ensure the quills make a well-shaped border frame. Then remove the quills, one group at a time, apply a little glue to the bottom edge of quills and joining strip and stick on to the mirror, pressing down lightly into position.

Quilled floral bouquet

Self-adhesive ribbon is ideal for making a pretty vase of quilled flowers. Use green ribbon for stalks and leaves, and colours of your choice for the flowers themselves.

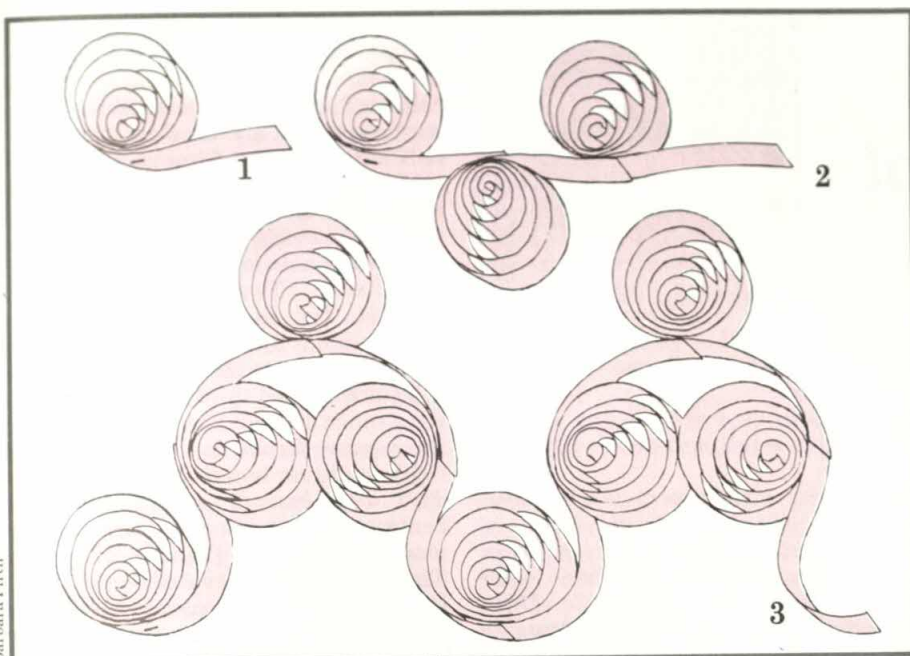
The choice of colours, sometimes two-toned or with gilt threads running through the ribbon, and silky-looking finish make this material particularly attractive for fantasy flowers—to use as mobiles or arrange in a vase.

Stalks are made of thin, pliable wire (such as florist's wire) round which green ribbon has been wrapped (moistened after each twist to make it self adhesive).

Bend the top of a stalk back on itself to make a small central circle—a base on to which to glue the flower petals. Glue leaves directly along the length of a stalk as shown in the photograph. Cut a piece of styrofoam or floral foam to fit a small vase. Plant the base of each stalk in the foam, and arrange your everlasting bouquet.



Silver Melinex quills make a shimmering border for a sheet of mirror glass.



Melinex quills are individually shaped round a finger, joined by tail pieces in groups of eight, then curved into a decorative border pattern.



Dick Miller

Above: stylized parcel ribbon flower.
Below: everlasting quilled bouquet.



Dick Miller

Rya rugs in colourful wool

Yarn — latch-hooking 3



The quickest types of rug to make with a latch-hook are those with a rya pile. Rya (pronounced 'ree-ah', to rhyme with clear) comes from ryijy, the Finnish word for shaggy. It was the name given to the heavy cloaks, made from tufts of sheep fleece inserted into a coarsely woven foundation, which were worn by fishermen and hunters in the Middle Ages. Gradually the raw fleece was substituted by woven yarn and the shaggy, long-piled rugs were used for sleigh covers, floor coverings,

wall hangings, cushions and bedspreads.

A modern method of making a rya rug is to use an open-mesh canvas founda-

The shaggy texture of a latch-hooked rya rug, like this one designed by Ryagarn, is created by using long, thin strands of yarn. Three strands are used in each knot to give a thick pile. These strands can be of different colours to add to the interest and give subtlety to the design of the rug.

tion and insert the shaggy pile with a latch-hook, using the same knot as for short-pile rugs (see Latch-hooking chapter 1, page 1110). Rugs made in this way grow quickly because they need half the number of knots worked on short-pile rugs; they are worked on the equivalent of alternate weft threads with the shaggy pile covering the foundation between the rows.

The yarn. Two-ply woollen yarn suitable for latch-hooked ryas is usually sold in pre-cut lengths containing 168 pieces, 18cm (7") long. Three lengths are used in each knot, making six strands of pile, 7cm (2½") long (the three strands are held together and treated as one length). On both standard rug canvas and special rya canvas, each cut-pack covers slightly more than 7.5cm (3") square.

The canvas. The rows of knots do not have to be worked as closely as for short-pile rugs because the long pile covers the foundation between rows. A special canvas is made for latch-hooked



ryas which has weft threads woven in alternate groups of one and three. The knots are still worked as closely in each row but the rows are worked over the single weft threads only, with the blocks of three threads left between them to give a firm foundation. This gives five rows of knots to 7.5cm (3"), with 10 knots to 7.5cm (3") in each row. If you are unable to obtain rya canvas you can use regular rug canvas and work the knots in rows over alternate weft threads. This gives the same number of rows as on the rya canvas—five per 7.5cm (3")—and the long pile hides the unworked threads.

The design. Traditional rya designs used subtle blends of colour which formed a random effect rather than a definite pattern. Curving bands of colour, splashes of colour in a contrasting background, irregular stripes and—in more modern designs—geometric patterns are all more effective than pictorial or flower designs which are not usually successful because the long pile blurs the definition of the outlines. Canvases are available with ready-printed designs and you can choose your own colours, or you can buy a complete design in kit form which includes all the yarn.

If you prefer to design your own rug, it is advisable to plan it on paper first so that you can estimate the amount of yarn you will need (see Latch-hooking chapter 1, page 1110).

The colours. The yarn for the earliest rya rugs was left undyed and the rugs were blends of browns, creams and

white. When more colour was introduced the yarn was hand-dyed which often produced variations of shade within one dye lot and this added to the subtlety of the colour blending in the design.

With commercially dyed yarns you can introduce interesting colour effects by using strands of different shades of one colour, or even two or three different colours, in each knot. Related colours such as grey and pale blue, beige and pale pink, red and orange or yellow and green—are usually the most successful combinations, but complementary colours used together in small areas can produce dramatic and unusual effects.

The additional advantage of blending is that if you do run out of a colour before the rug is finished and have to buy more from a different dye lot, the colour variation will be unnoticeable. Even on a monochrome rug you could use two strands of one dye lot with one strand of another in each knot and any difference would be hidden.

Preparing the canvas. Prepare the canvas by turning up the raw edge in the same way as for short-pile rugs. Position the fold so that it lies along a single thread of the canvas. Because the pile overhangs the edges of the canvas, the first and last rows of knots can be worked in the thread along the folds. For the same reason no special finishing is required along the selvages, and the knots should be worked up to the selvages without leaving a hole at each side.

Diamond patterned rug

To make a diamond patterned rug like the one shown in the photograph, you can buy a canvas ready printed with the design or you could draft out your own design on graph paper.

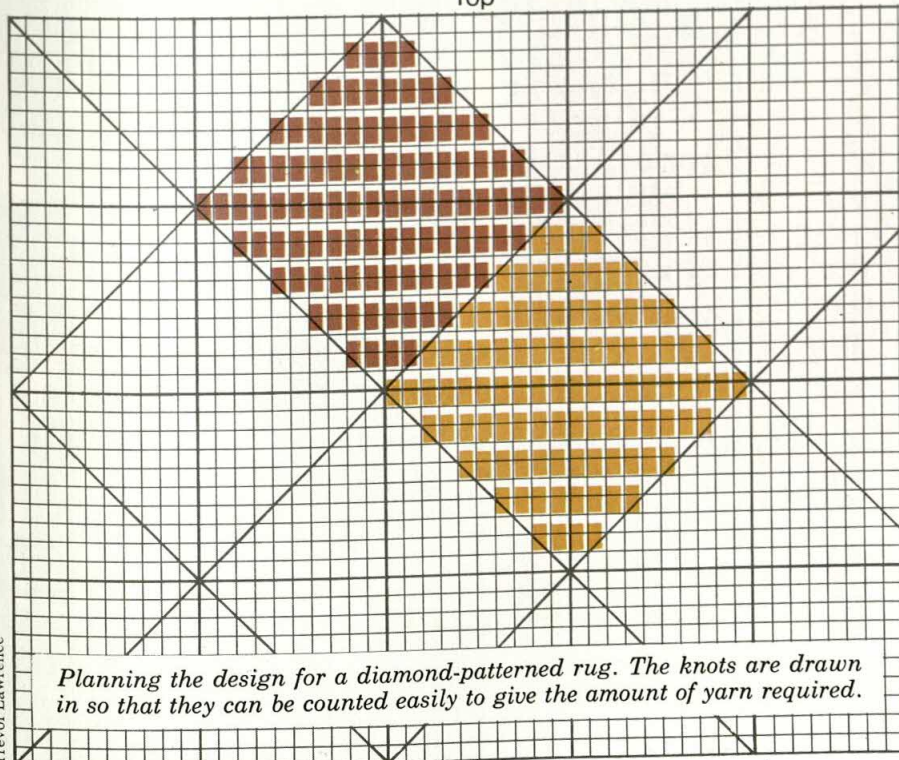
Drafting the design. Use graph paper which is printed with 10 squares to a unit so that each unit will correspond to 7.5cm (3") of canvas. Draw the shape of your rug to scale on to the paper and then divide the shape into equal-sized squares or rhombi (depending on the shape of diamond you want), using the lines of the graph paper as a guide.

From the squares or rhombi, draw the diamonds so that the diagonals pass through the intersections of the horizontal and vertical lines (fig.1). Mark the positions for the knots in one diamond, placing them on the lines of the graph, in alternate horizontal rows.

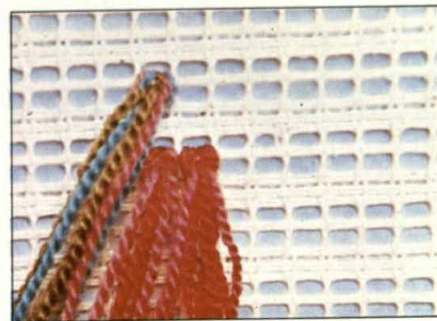
Calculating the yarn quantity. Count the number of knots to be worked in each diamond; multiply by the number of diamonds to be worked in each colour or combinations of colour and multiply this by the number of strands in each colour. From this you can calculate the number of cut strands in each colour you require.

On rya rug canvas the knots are worked on the single weft threads and the long pile covers the canvas between rows. The three strands of yarn used in each knot may be of related colours for a subtle effect or complementary colours if you want a more striking result.

Top



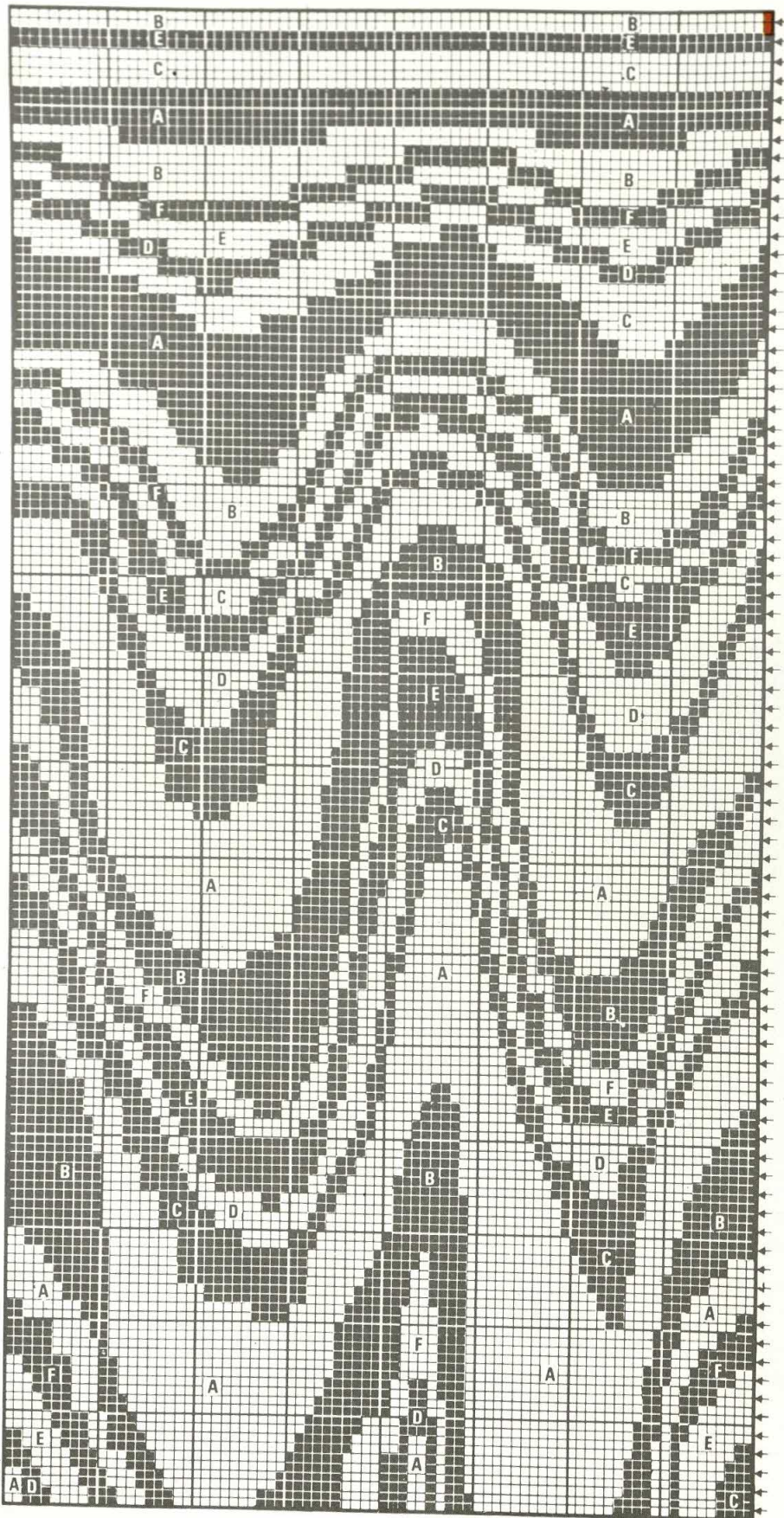
Planning the design for a diamond-patterned rug. The knots are drawn in so that they can be counted easily to give the amount of yarn required.



Dick Miller



Alasdair Ogilvie



The ripple rya rug shown opposite can easily be worked in alternative colours, like those in the photograph above, by substituting your chosen shades for those given in the chart below. The rugs were designed by Ryagarn.

Rug with ripple design

Completed size: 61cm x 122cm (24"x48"). The yarn quantities are specified for the colours used for the rug in the photograph but you can easily substitute colours of your own choice.

You will need:

Rya rug canvas, 132cm x 61cm (52"x24").
Rya rug yarn (168 pieces per cut pack), see chart below.

Graph paper, or dressmakers' squared paper, 61cm x 122cm (24"x48").

Felt-tipped pens or paints, preferably in colours to correspond with the yarns.

□ Enlarge the design to scale (see Design know-how, chapter 4, page 112). Place the canvas over the design so that 5cm (2") extends at each end. Trace the design on to the canvas using the felt-tipped pens or paints to mark the outlines of the areas in the appropriate colours.

□ Work the knots on to the canvas in the normal way.

Chart for ripple design rug

Colour	No. packs	No. strands in each colour per area					
		A	B	C	D	E	F
off-white	45	3				1	
light grey	16		2				
dark grey	15		1		2		
grey-blue	15			1		2	
caramel	10			1			1
tan	10			1			1
mid-brown	4				1		
dark brown	4						
		3	3	3	3	3	3

To fill a given area, read down the column to find the number of strands you need in each colour (remember, three strands are used in each knot). For example, in C areas you will use one grey-blue, one caramel and one tan.

Graph pattern for the ripple rya rug shown opposite. Each square on the graph represents one hole in the canvas and the rows of knots are indicated by the arrows at the side of the graph (ie each single knot is shown by a pair of squares such as those marked in red). For colour key, see chart below right.



Introduction to lampshade making

Cloth —
lampshades 1

Fabric lampshades can be made in many shapes and sizes but in most cases the basic techniques involved are the same and once you have learnt how to make one shape you can easily go on to make the others.

Making a fabric lampshade which is completely taut and smooth takes time and patience and it is these qualities which are reflected in the price of those you see in the shops; the basic materials themselves are not expensive.

The frame

The frame forms the structure of every type of lampshade. Frames are available in several different styles and sizes with various fittings for attaching them to the light. They are made from tinned or copper wire and joined by spot welding or—on better made frames—by soldering.

Each frame consists of two rings, one of which contains the fitting for attaching the lampshade to the light. The rings are joined by struts or staves, which may be curved or straight. The relative diameters of the rings and the length of the struts determine the size of the lampshade and the shape of the rings and the struts governs its shape. Fig.1 shows the most common shapes available. When you buy your frame, check that the struts are evenly spaced and firmly fixed to the rings and their shape has not become distorted by storage. If you cannot find the shape and size of frame you want ready made, some lampshade-frame suppliers will make a frame to order.

The fitting

Frames are made with a variety of

fittings and you should choose the correct one for your purpose.

Pendant fitting (fig.1) is used for hanging shades. It consists of a small ring held by two or three arms which are joined to opposite sides of the top ring. The small ring fits on to the lampholder (this is the fitting which holds the bulb and has a small ring which is unscrewed so that the lampshade can be put on). Some frames are fitted with a dropped pendant (fig.2) which ensures that the lampholder is hidden. Some straight drum frames have this type of fitting so that the frame can be used with the pendant at the bottom for a table lamp.

Duplex fitting (fig.3) is designed for standard lamps or big table lamps. It consists of an inner ring of about 10cm (4") diameter which is attached to the top ring by four arms and positioned 7.5cm (3") below the top ring. The inner ring sits on a separate shade carrier (fig.3a) which is screwed to the lampholder. Shade carriers are available in different heights and you should choose one which will position the shade so that the bulb is in the middle of it.

Gimbal fitting (fig.4) is used for table lamps. It consists of a small ring attached to the top ring by hinged arms so that the shade can be tilted to direct the light in any direction.

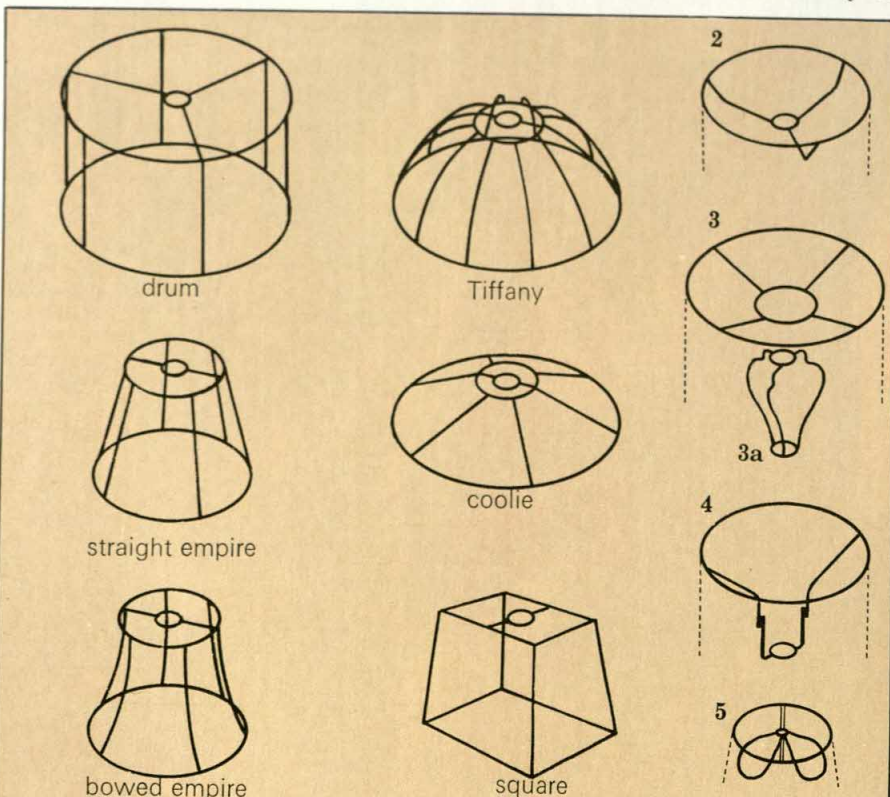
Butterfly clip fitting (fig.5) is used on small shades for wall fittings or multiple ceiling fittings as well as small table lamps. The clip fits over the bulb.

The fabric

Most medium to lightweight natural-fibre fabrics can be used to make lampshades, although for those styles which are fitted on the bias or cross of the fabric some printed fabrics with a definite design—such as flowers with stems—may not be suitable.

Choose the fabric initially to suit the decorative scheme of your room but bear in mind the fact that some colours change when seen under artificial light or they may vary the type of light which the shade will give. Dark colours, for example, tend to absorb the light whereas pale colours reflect it and allow the light to pass through. Lining a dark colour with a white, pink or beige fabric will help to give more light. If possible hold your chosen fabric with the lining over a switched-on bulb to get an idea of the effect before you buy it.

Silk is the traditional fabric for lampshade-making and although it is the most expensive of the fabrics you might choose, it is worth the extra cost because it is pliable and easy to fit, it does not sag or split easily, it washes well and does not shrink. Most kinds of pure silk can be used and there are



1. Some of the most readily available shapes for lampshade frames, shown here with a pendant fitting. Fig.2. Dropped pendant. Fig.3. Duplex fitting with shade carrier. Fig.4. Gimbal. Fig.5. Butterfly clip.

some imitation silks, such as taiho and dupion, which are also suitable. Most lampshade-frame suppliers have a selection of suitable silks but you may find a wider selection among dress fabrics. Beware of using furnishing fabrics which are stiff and do not have much give.

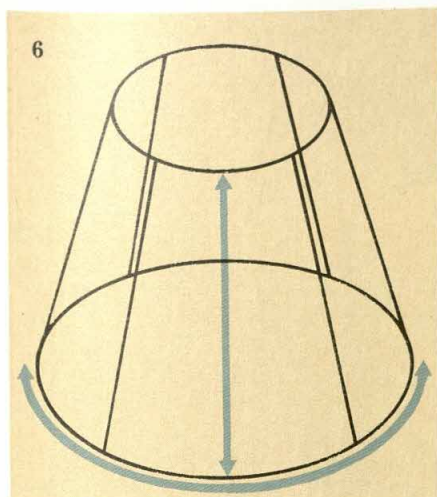
Cottons of all kinds can be used for most styles of lampshade, although you may be restricted to frames with straight struts if you choose a design which cannot be used on the bias.

Linens are normally too firmly woven to be good for lampshades and they are difficult to fit smoothly and may not allow much light to pass through. Some of the finer embroidery linens, however, may be used for drum or panelled shades, particularly where a lacy effect has been worked, perhaps by drawn or pulled thread work.

Man-made fabrics, such as nylon or polyester, are not usually suitable for lampshades because they tend to shrink or sag under the warmth of the light-bulb and some weights tend to split when they are pulled hard during fitting.

Fabric requirements

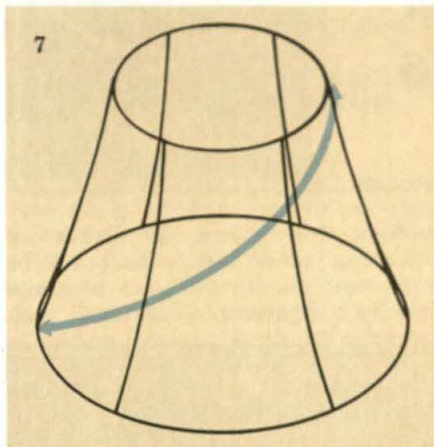
For a tailored cover on frames with straight struts, such as the drum or the straight empire, the fabric is fitted on the straight of grain. Measure half the circumference of the bottom ring of the frame (or its widest measurement) between two struts on opposite sides and then measure the height of the frame (fig.6). Allow enough fabric to cut two rectangles to these measurements plus about 7.5cm (3") all round for fitting.



6. Measuring for a straight-cut cover.

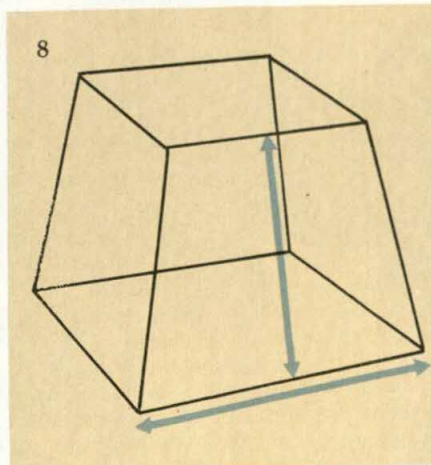
For frames with curved or bowed struts, such as the bowed empire, the fabric is fitted on the bias. Measure the frame diagonally between struts on opposite sides of the frame from the top ring to the bottom ring (fig.7). Allow enough

fabric to cut two squares of fabric on the straight of grain to this measurement plus about 7.5cm (3") for fitting.



7. Measuring for a bias-cut cover.

For a panelled cover, measure the width of each panel across the widest part and then measure the height. Allow enough fabric to cut a rectangle on the straight of grain to these measurements plus about 7.5cm (3") all round for fitting (fig.8).



8. Measuring for a panelled cover.

Covering methods

There are three main methods of making the cover for a fabric lampshade.

Semi-fitted. This is the simplest method and also the quickest. The cover is made to fit the widest part of the frame and is gathered or pleated to reduce the fullness on either or both rings if they are narrower than the widest part.

Use for Tiffanys, balloon shades (like a Tiffany, but spherical) and any type of frame with straight struts.

Panelled. This method requires some skill in achieving a smooth finish. The fabric for each section is fitted and stitched to the frame individually and the stitching on the struts is neatened by a trimming. It is the only method

where the cover is stitched to the struts as well as the rings.

Use for square shades, bowed drums and straight empire shapes. It is also a good method if you want to incorporate panels of embroidery or appliqué.

Fully fitted or tailored. This is the method requiring most skill and time. The cover is made to fit the frame tightly all over so that the finished lampshade is smooth and taut. With the exception of the drum shape, this is normally achieved by using the fabric on the bias although some pliable fabrics can be used on the straight grain. The cover is normally made in two halves, one for each side of the frame. The seams joining the halves should be placed exactly over the struts of the frame.

Use for all styles of shade with circular rings.

The trimming

The trimming is the finishing touch of all lampshades and is fitted round the rings to hide the stitching and raw edges of the fabrics.

You can fit braid to both rings or you could fit the braid to the top ring only and use a co-ordinating fringe for the bottom ring.

Suppliers of lampshade materials have large selections of trimmings and it is preferable to use these rather than furnishing trimmings which are less pliable.

For a more tailored finish you could use velvet ribbon in a colour to match your fabric or you could make your own trimming from spare pieces of bias fabric to match your cover.

To calculate how much trimming to buy, measure the circumference of the rings and add on 2.5cm (1") for turnings.

Tools and materials

You do not need any specialized tools and materials for lampshade-making and those you do need you will probably have already.

Scissors, with sharp blades, for cutting the fabric and trimming the edges.

Pins—use rustless steel dressmaker's pins or the glass-headed type for fitting the cover. Lills pins (short fine pins) are useful when stitching the fabric to the frame as they are less likely to scratch you.

Sewing thread to match your cover fabric.

Needles. 'Betweens' needles are ideal because they are short and stiff and unlikely to bend or break when they touch the frame. You may need several needles because the points become blunt quite quickly.

Adhesive, such as Bostik 1, for finishing seams and for attaching the trimming.

Soft soldering using tin cans

Metal 16



tackle the more intricate work once you have gained some experience. Solder a few tin cans together or make an abstract metal collage or sculpture before working with silver. It will save you disappointment and expense if you have a bit of practice first.

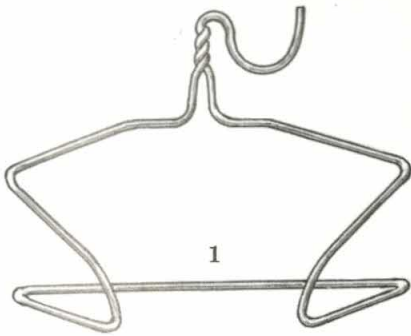
To ensure the best possible results the following conditions are necessary. The solder itself and the metal surfaces to be joined together must all be at the

Soldering has various applications but start by getting familiar with the equipment and the technique (Metal chapter 15, page 1130) before you

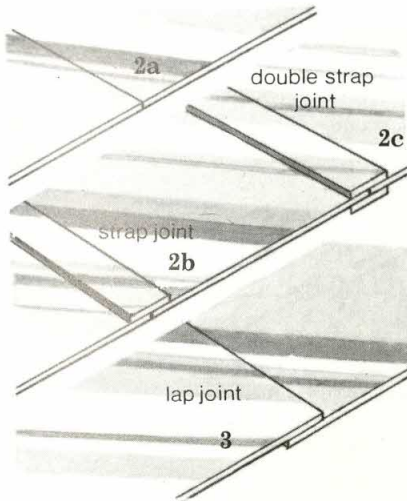
embark on a project. The first bit of soldering you do will probably not be very neat so, if you want to make jewelry, experiment first and then

Three tin cans of the same size are soldered together to make this hanging plant holder. The size can be varied to adapt the design to a tool tidy.

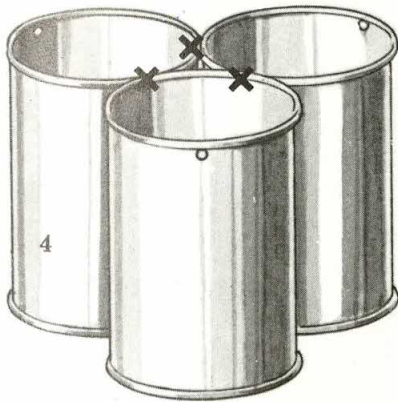




1. 'Coat-hanger' soldering iron stand.



2-3. Various joints.



4. Cans positioned for soldering.

same temperature and this temperature must be just above the melting point of the solder. If the solder does not flow the metal is not hot enough. The surfaces must be clean and free from dirt and corrosion. The right kind of solder must be used for the metals being joined together.

Working area

You do not need a large working area (depending on what you are making) but keep it tidy and uncluttered. The equipment is not dangerous if you use it sensibly—it is important to remember that it produces heat and that you should handle it with the same degree of care as you do a hot iron. If you do not have a workshop you can use the kitchen. Work on a heat resistant surface, preferably an asbestos mat. Always rest the soldering iron on a stand when it is hot so that the copper bit is not in contact with anything. Bend a wire coat-hanger to make a stand for the hot soldering iron (fig.1). For an electric soldering iron you will need to work near a power point. If you are working with a blowtorch do not point the flame towards yourself, nor towards a wall. Keep the flame as small as possible and only turn it up when you are doing the actual soldering. If it makes you feel safer keep a small fire extinguisher near your working area.

Joints

The solder used to join two pieces of metal together is usually weaker than the metal. To make the joint as strong as possible the area of contact between the two pieces of metal should be as large as possible to increase the 'hold' of the solder on the metal.

A **butt joint** is the weakest type of joint (fig.2a). It will hold the metal together if that is all that is required. **Strap joints.** Strengthen a butt joint by adding one or two strips of metal to make a strap joint (fig.2b and 2c).

Lap joints (fig.3) are stronger than butt joints. The bigger the overlap is, the stronger the joint. If the overlap is very big the surfaces making contact must first be tinned, ie covered with solder. They are then put together and heat is applied to 'sweat' them together.

Preparations

The area of metal to be soldered must be clean and free from grease. Rub the metal down with steel wool, glass-paper, emery cloth or, if the metal is rusty, use a metal file to clean it. Remove any traces of grease with a scouring powder.

Left: after the areas of contact are fluxed heat the tin cans with the hot iron for soldering.

Soldering technique

While you are preparing the metal warm the soldering iron or light the blowtorch and adjust it to a small flame.

☐ Apply flux with a small paint brush or wooden spatula where the solder is required. Do it neatly as the solder flows wherever the flux is.

Copper bit or tip, ie a soldering iron, or a blowtorch attachment, must be tinned before use.

☐ Make sure the tip is free of rust.

☐ Dip the heated tip into flux then touch solder to the tip to cover the working surface.

☐ Heat the metal evenly where it is to be joined by putting the bit or tip on the metal. The solder will flow from the bit once the metal is hot enough. If more solder is required touch the solder to the tip. Once the metal is hot enough the solder can be touched directly to it so that the solder flows to fill any gaps.

Blowtorch—heat the metal where it is to be joined with the inner blue flame.

☐ Touch the solder to the metal. If it does not flow the metal is not hot enough to melt the solder.

☐ Use enough solder to let it flow over the join but do not use too much or the join will be untidy.

Finishing. Leave the solder to cool. The shiny molten solder will become dull as it cools. Do not handle the metal before it is cool.

☐ If you have used an acid flux thoroughly wash the join with soapy water.

☐ If the join is untidy clean it with a metal file.

Plant holder

To become familiar with soldering equipment make the plant holder illustrated. It is inexpensive and if you don't succeed the first time you can throw it away and start again.

You will need:

Soldering equipment (see Metal chapter 15, page 1130).

Mild flux.

60-40 solder.

Hammer, metal punch and metal file.

String or wire from which to suspend the plant holder.

Tin cans—3 of the same size.

☐ Using the punch make holes in the bottoms of the cans.

☐ Punch one hole opposite the seam and below the rim of each can.

☐ Arrange the cans so that the holes below the rim are on the outside and mark the cans where they make contact with each other (fig.4).

☐ Solder the cans together where they make contact. This is a butt joint.

☐ Tidy the joints if necessary.

☐ Attach the wire or string from which to hang the holder.

Stools

These attractive stools can be made large enough for grown-ups or as small as you wish for children.

You will need:

Equipment as for Plant holder.

Tin snips.

Trimming knife.

Coping saw.

All-purpose adhesive, such as Evo Stick.

Plaster—the cans are filled with plaster of Paris to make the stool stable.

Thick foam rubber—to pad top of stool.

Hardboard—to cover base.

Tin cans to make the arrangement illustrated.

□ Solder the large cans together to make the central column (fig.5).

□ Take half the seat cans and solder them in a semi-circle so that they fit around the central column of tins. The cans must be soldered to the column just below the upper rim of the larger can at the top (fig.6).

□ Repeat with the remaining half to make a complete circle around the column.

□ Using tin strips as shown, solder all the cans together to give the structure more strength with strap joints (fig.7).

□ Similarly solder the cans round the base (fig.8).

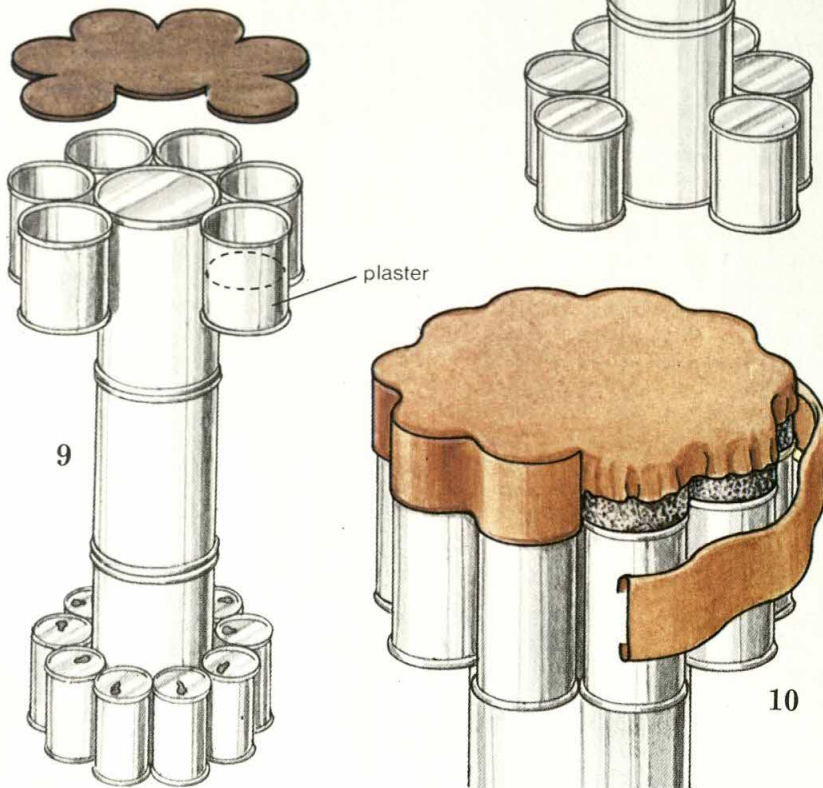
□ Fill the cans around the base with plaster.

□ Paint the tin cans if you wish.

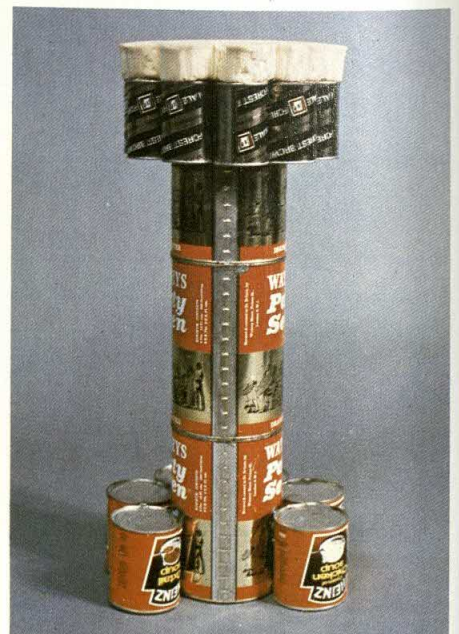
□ Using the coping saw cut out the hardboard to the shape of the base and glue it in position (fig.9).

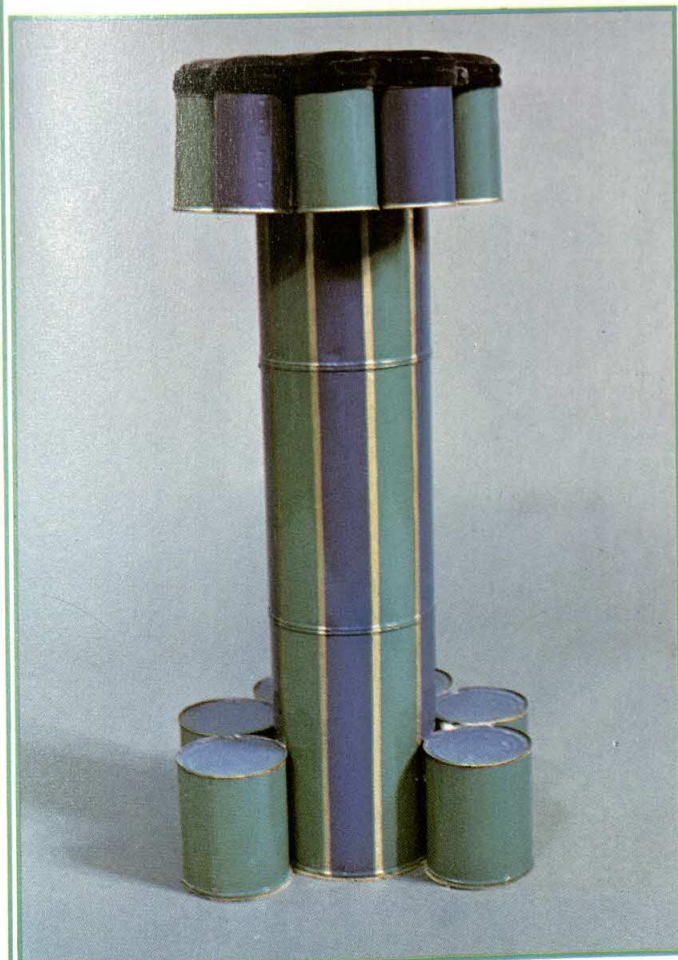
□ Using the trimming knife cut the foam to fit the seat and glue it in position.

The seat can now be covered with a fabric of your choice. Stick the fabric to the seat. Cut and stick a strip to cover the side (fig.10).



5. Large tin cans form central column. 6. Smaller tin cans fit round central column. 7. Strips added for strength. 8. Tin cans for the base. 9. Hardboard to fit base. 10. Shaped foam rubber covered with fabric.





The stools can be altered by using tin cans of different sizes and finished in bright colours. Designer Assem Tewfik.

Dyeing, painting and bleaching

Flowers and
plants 7





The colours of natural plant materials, whether leaves, flowers or seed heads, cannot be surpassed. However, there are times when unnatural colour combinations are required to change or emphasize existing colours. Rich, fanciful arrangements or gentle, more subtle ones are the results.

Plant colour can be changed by dyeing, bleaching or painting. The methods of each are simple and the choice you adopt is largely governed by the plant material you have selected.

Dip-dyeing

Flowers with dried stems such as grasses-hare's-tail, cat's-tail-teazels, glixias, bleached dried leaves, alliums, helichrysum, maize, honesty, love-in-a-mist seeds and agapanthus seed heads can all be dip-dyed.

You will need:

Hot water fabric dye.

Saucepan.

Jam jars tall enough to support plant material.

Kettle. Fan heater.

Absorbent dried plant material as described above.

□ Mix a solution of the powdered dye and water according to the instructions on the packet but use boiling water from a kettle instead of heating the mixture on a cooker.

□ Swirl the plants gently in the dye solution until the proper shade is reached or, if necessary, immerse them entirely. Remember that the colour will dry a lighter shade.

To dry, stand the material in the jars. Place the jars on layers of newspaper and blow dry with a fan heater.

If the stems bend over too much because of excessive water intake, lay them on the newspaper until they are half dry, then stand them upright and blow dry.

(All plant material will dry more quickly in front of a fan heater and the action of the fan tends to fluff them up again.)

Painting dried material

Dried plants which are not too delicate or feathery can be spray-painted and this is especially useful for decorating fir cones, and similar material which can be used for Christmas or other festive decorations. Gold or silver can also be painted on in this way.

Nuts, lotus seeds, verbascum, wheat, barley, poppy seeds and laurel, ivy or holly leaves can all be spray painted.

To spray cones and other materials which have no stem, put them in a flat open box. This confines the spray and avoids the necessity of handling the

Fantasy colours can be produced; natural colours emphasized with dye and paint.

objects. Shake the box from time to time to jostle the cones so that their entire surface is sprayed.

For long-stemmed plants, hold and spray several at a time to catch any drifting paint. Drying takes only a few minutes.

Varnish can be sprayed on in the same fashion.

Bleaching

Tough wood and bark material like cones and teazels can be bleached and, while this is a simple process, it is important to work in rubber gloves and preferably outdoors—the fumes of the bleach are very strong.

Use household bleach but buy the strongest brand you can and use it full strength. Put the plant material into the bleach and leave it for a few minutes. If the bleach is strong enough the change in colour will be immediate. When the material is as light as you wish, remove it and rinse thoroughly in water.

Blow dry in front of a fan heater, otherwise seedheads such as fir cones tend to close up.

Colouring live flowers

Many white or pale flowers, like carnations or chrysanthemums, can be dyed to produce unusual colours by allowing the flowers literally to drink the dye.

You will need:

Cold water dye such as Dylon.

Glycerine.

Warm water.

Container.

□ Mix cold water dye with glycerine and add warm water according to instructions on dye packet. For example, using a tin of Dylon cold water dye, add 2 teaspoons of glycerine and .5 litre (1pt) warm water.

□ When the mixture has cooled, place the flower stems in the dye solution. Colour begins to appear after about an hour but the final depth of shade will depend upon the length of time the flowers are left in the dye.

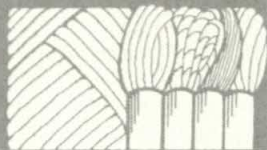
This in no way harms the flowers which can then be transferred to a vase or bowl.



Some fresh flowers will drink colour.

Designing for tablet weaving

Yarn — weaving 14



Weaving with tablets is as absorbing as any other form of weaving possibly because of, rather than in spite of, the limitations of width. Of course, it has the added attraction of being a type of weaving that needs no equipment other than a set of cards and the yarn. In Weaving chapter 13, page 1144, the general principles of tablet weaving were introduced. The possibilities for pattern making are endless.

What to do with your braids

The width limitation of tablet weaving can also be its design strength, for the harlequin effect of several related, but differently patterned, braids sewn together has an attractive peasant feel. You can sew as many braids as you like together to make bags, cushions, mats or even small scatter rugs. Individual braids can be used as belts, straps, hatbands, ties, chokers, watchstraps, table runners and so on.

Perhaps the most attractive use of all for your braids is as trimmings for clothes and household objects. Sew braids on to cuffs, necklines, hems, pockets, bedspreads, curtains, or anything that needs a facelift. However, a word of caution—do be careful to select the right weight of braid for your fabric. A heavy wool braid would just not work on a lightweight fabric.

General hints

If you had difficulty in weaving the watchstrap in Weaving chapter 13, you could have been making one of several mistakes common to beginners. Try to find out where you went wrong before you move on to the next stage of weaving braids to your own designs. Here are some general hints on tablet weaving that should help you to avoid mistakes and to create perfect braids.

Threading mistakes

If the cards were threaded in the opposite directions from those indicated in the chart then a different twist effect would be produced and the pattern would be submerged. If the tablets were all threaded in the same direction, the pattern would be lopsided with half of the design dominant. Threading all the tablets in the same direction also tends to encourage the completed braid to curl up around its

length if the tablets are then turned all the same way. This varies with the type of yarn used as some curl more than others.

Practice with the patterns given in this chapter will help you to come to the

right decision about threading.

Keeping an even width

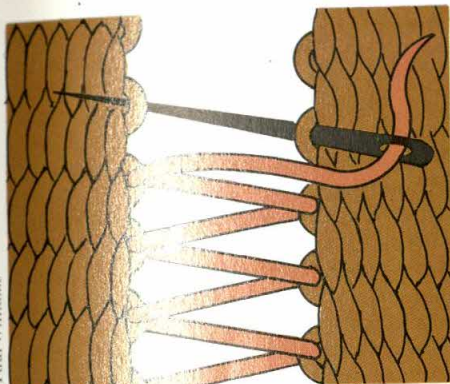
It is not always easy to keep the weaving an even width but any difficulty can soon be put right if care is taken to press the weft firmly and evenly into place. Draw the weft through the shed just enough to bring the warp threads together to cover the weft yarn and to give a firm, straight edge.

Do not hold the tablets too tightly together or they will be difficult to turn. They should be controlled but not pressed so tightly together that they do not hang free of each other.

Always secure the tablets with the cord through the centre hole when weaving

Sew braids together for a peasant bag.





Joining. For a firm, invisible join between braids use a thread the same width as your weft. Thread your needle through the loops of weft at selvages.



Peter Heinz

Spectacle cases made from very wide braids. Designed by Pat Holtom.

Braids make excellent trimmings.



Roger Charity

is interrupted to prevent misplacement.

Length of the warp

There is always a certain amount of wastage for which allowance must be made when working out the length of the warp threads. In calculating the length of warp necessary for a finished braid of a definite length, remember to add two lots of 15cm (6") for the knots at each end and 30cm (12") for the end of the warp which cannot be woven.

A further generous allowance must be added for the take-up during weaving. This varies with the material used and the closeness of the weaving but 15cm (6") is a good average.

Correcting mistakes

If a mistake in the pattern has been made it can be rectified by turning the tablets in reverse. The warp will untwist and the weft can be drawn out.

Tablet weaving is not easy to undo, so you should watch the pattern carefully and you should not rely entirely on counting.

Finishing off

To finish off your braids many different methods are open to you: simple sewing with an interesting stitch such as buttonhole; overhand knots (see Weaving chapter 9, page 652); wrapping and tassels (see Weaving chapter 12, page 892); plaiting (see Weaving chapter 1, page 10) or twining (see Weaving chapter 11, page 856).

Sometimes, the nature of the design will suggest the finish—a three-way pattern ending in three plaits for instance. Of course, the use to which you wish to put the braid will dictate the finish—plain or decorative, neat or shaggy.

Pattern making

By using different coloured yarns and weaving to a definite order, a great variety of patterns can be obtained. There are various steps in designing your own patterns each of which are important if your final braid is going to turn out exactly as you imagine it. Due to its unique construction, the resulting fabric is very strong lengthwise but, as it is not practicable to work with a great many tablets, this weaving technique is limited to the production of narrow fabric widths.

Width. The number of tablets and thickness of the yarn determine the width of the fabric. Twenty-four tablets threaded with no.5 cotton for instance, or sixteen tablets threaded with four-ply knitting wool will, if correctly woven, make a 2.5cm (1") band.

Choosing yarns

Practically any yarn may be used, but it must be strong enough to withstand the constant twisting. It also needs to be smooth and easy running. Fuzzy and knobbly yarns do not give good results and can be difficult to work

with as the fibres will cling together. Medium-weight mercerized cotton is recommended for beginners but wool, cotton, silk, nylon and other man-made yarns can all be put to good use.

Colour

All the colour is supplied by the lengthwise warp threads. The weft is not visible except for a very little at the edges.

Colour plays an important part in planning a pattern. Many arrangements are possible, of course, but the colour of the actual pattern should be in sharp contrast to the background. Brilliantly coloured pattern units on a dark or light background are the most effective.

Number of tablets

When you have chosen your yarn, you will have to find out how many tablets you will need to create a band of a particular width. Each card adds to the width of the fabric and a rough assessment of the width per card can be made by twisting two strands of your chosen yarn together. Measure the width of the twisted strands. This will be added by each tablet to the total width of the band. Therefore, if your two fibres measure 1.5mm ($\frac{1}{16}$ ") you will need sixteen tablets to make a band 2.4cm (1") wide. This is only a rough guide and the tension of the twisted threads must be the same as the tension achieved when weaving if it is to be at all accurate. Experience is the only real guide.

Working out a design

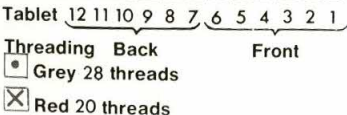
All patterns are worked out on squared paper. As was shown in Weaving chapter 13, each square represents one thread. Each vertical column of squares represents the four holes in each tablet and are numbered from 1 to 4 correspondingly. The number of tablets required is indicated along the bottom of the chart and the symbols show the colour of each thread. The threading direction of the tablets is also shown, and the colour key with the required number of threads is shown with each chart.

Drawing up drafts

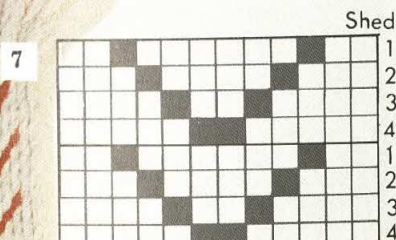
Take a piece of graph paper (or square off a plain piece). Follow the patterns in this chapter as a guide.

It is easier to start designing for yourself with only two colours but even with two you can achieve many interesting variations.

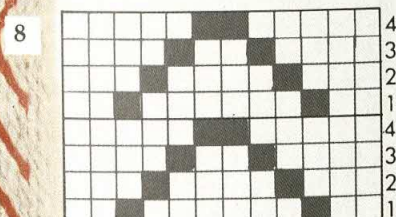
The design of a braid is dictated by various factors: the colours and their arrangement, the threading direction of the tablets, and the turning sequence when weaving. It is because of these variables that so many different patterns can be produced with this simple technique.



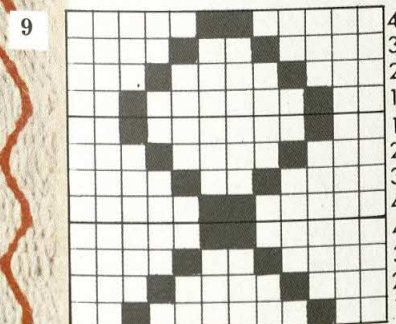
6. The pattern chart for the sampler. All the designs are made on this one warp by using different turning sequences.



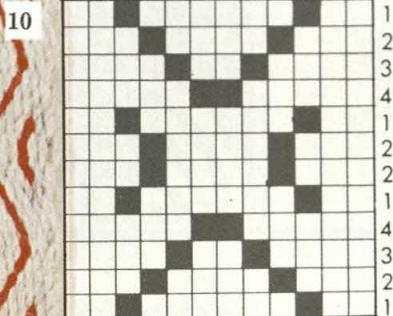
7. This design is produced by turning the tablets continually away from you.



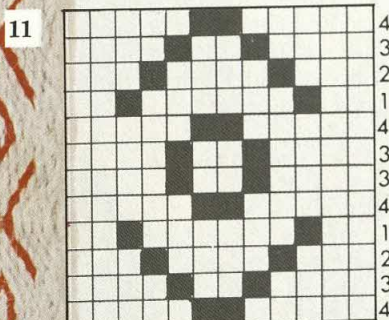
8. Turn the tablets continually forwards, towards you, to get the reverse design.



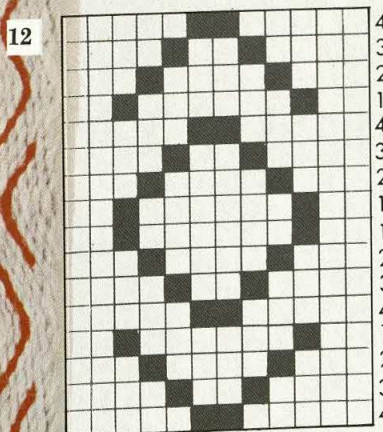
9. Turning the tablets four turns each way produces this design.



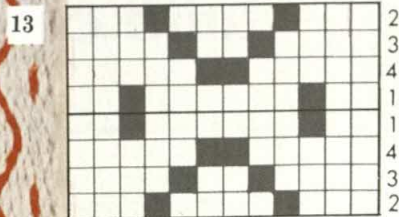
10. For this design, turn the tablets six turns each way starting with six forward. Shed 2 is used for the directional change.



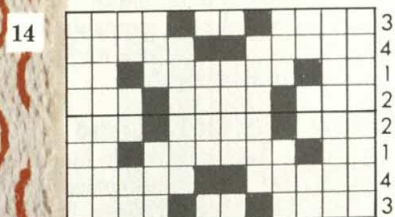
11. This pattern is also six turns each way but the first direction must be away from you. Shed 3 is used for the directional change.



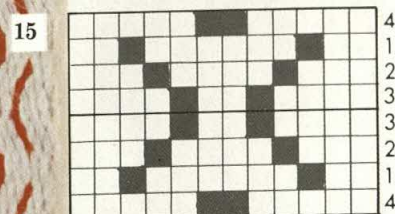
12. Eight turns each way makes this design and it does not matter which direction you start with as the same pattern will appear.



13. Change the direction of a four turns each way design in shed 1.

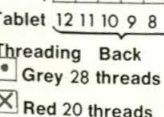


14. Four turns each way pattern with the change in direction in shed 2.



15. Four turns each way pattern with the change in direction in shed 3.

Where the tablets
change direction, the
pattern repeats itself in
reverse. Do not put the
weft twice through the
same shed as this will simply
undo the previous pick.



One of the most exciting aspects of tablet weaving is the number of different patterns that can be achieved simply by altering the method of turning. The sampler shows just some of the pattern variations that can be created on one set of warp ends. The tablets can be turned in any number of repeating sequences, four

Weave different areas of the braid using different sequences of turning—tablets turned all forward, tablets turned all away, four turns each way, six turns each way, eight turns and so on. Also try to alter the shed which is chosen for the change of direction and you will find that a different pattern emerges. Remember to put on a nice long warp so that you can experiment on the one set of threads.

6 Tablet Hole

	12	11	10	9	8	7	6	5	4	3	2	1
4												
3												
2												
1												

Threading B B B B B B F F F F F F

The sampler

6. The pattern chart for the sampler. All the designs are made on this one warp by using different turning sequences.

7

Shed

1
2
3
4
1
2
3
4

7. This design is produced by turning the tablets continually away from you.

8

4
3
2
1
4
3
2
1

8. Turn the tablets continually forwards, towards you, to get the reverse design.

9

4
3
2
1
1
2
3
4
4
3
2
1

9. Turning the tablets four turns each way produces this design.

10

1
2
3
4
1
2
2
1
4
3
2
1

10. For this design, turn the tablets six turns each way starting with six forward. Shed 2 is used for the directional change.

11

4
3
2
1
4
3
3
4
1
2
3
4

11. This pattern is also six turns each way but the first direction must be away from you. Shed 3 is used for the directional change.

12

4
3
2
1
4
3
2
1
1
2
3
4

12. Eight turns each way makes this design and it does not matter which direction you start with as the same pattern will appear.

13

2
3
4
1
1
4
3
2

13. Change the direction of a four turns each way design in shed 1.

14

3
4
1
2
2
1
4
3

14. Four turns each way pattern with the change in direction in shed 2.

15

4
1
2
3
3
2
1
4

15. Four turns each way pattern with the change in direction in shed 3.

Where the tablets change direction, the pattern repeats itself in reverse. Do not put the weft twice through the same shed as this will simply undo the previous pick.

Basic shapes with cones

Design know-how 42



Three-dimensional geometrical figures such as cones, cylinders and cubes form the basic shapes for much craft work.

A cone is simply constructed from part of a circle. It is a useful shape which can be adapted to make all sorts of funny dress hats, lampshades, paper flowers and decorations and containers as illustrated in fig.1.

How to make a cone

A cone is basically made by drawing a circle and cutting a sector from it. You can make small cones, large cones,

fat cones, thin cones (fig.2) and cones with the top removed (fig.3).

You will need:

Sheet of stiff paper 20cm x 25cm (8" x 10").

Pair of compasses, protractor, ruler, pencil, scissors and adhesive tape.

Draw a circle on the paper with radius 10cm (4").

Draw a straight line from the centre of the circle to anywhere on the circumference, and draw another line at 90° angle to the first.

Cut along both lines to the centre of the circle and remove the sector which

you have cut (fig.2a).

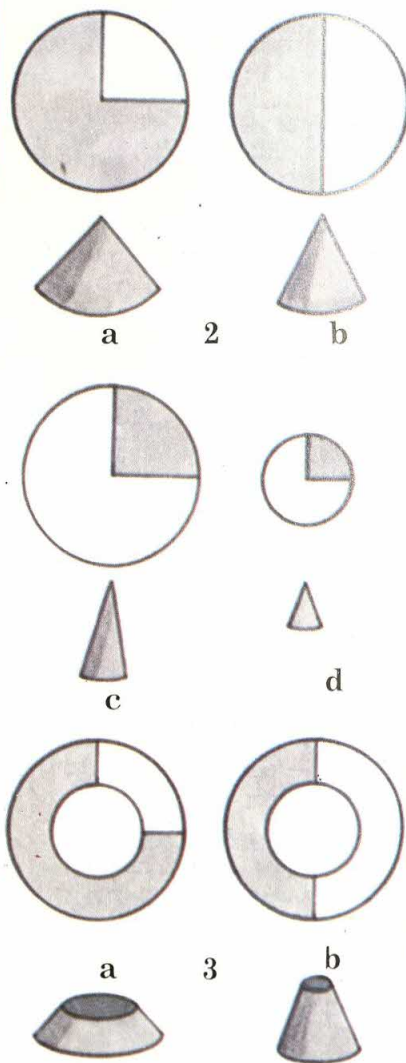
Pull both cut edges towards each other and tape together.

The circle has now become a wide cone. You can make the cone narrower by increasing the cut-out area (fig.2b and 2c). Remember that if you halve the radius of the circle (fig.2d) the area of this cone will be one quarter that of the cone in 2c. Of course, if you increase the radius of the circle the cone will be correspondingly larger.

Lampshade shapes (fig.3a and 3b) are made by drawing a circle and then drawing a smaller circle inside. Draw in two radii as before and cut out the sector. Cut out the entire area of the inner circle. Join the two cut ends to make a cone with a slice cut off the top. With a little practice and experimenting with sizes and shapes you will be able to make a variety of cones useful in your craft work.

2. Make a cone wider or thinner by increasing or decreasing the cut-out area and smaller or larger by altering the radius. 3. Lampshade shapes.

1. Four variations on paper cones and a candle made in a paper cone.



Creative ideas 42

Padded letter shapes

These three-dimensional letters can be useful for teaching a small child the alphabet or provide an endearing present if they make up the initials of the recipient.

Although they can be made from most fabrics, felt is preferable as it does not fray.

You will need:

Felt or other non-fraying fabric scraps.

Kapok for stuffing.

Graph paper with 2.5cm (1") squares.

Needle and thread.

Draw patterns on to graph paper for each letter you wish to make. A book on calligraphy would be a useful reference for letter shapes.

Cutting out. Cut two shapes for each letter.

Now cut gusset strips for the letters. They should be as wide as the width of the letter (fig.1).

It is easier to cut longer strips than necessary and trim them to fit as you sew. You will also need to cut small squares to close the ends of letters like E, I, L, T and so on (fig.2).

Making up the letters.

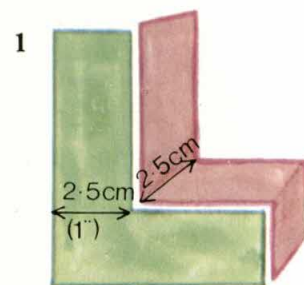
Some letters have inner gussets as well as outer, ie B, D, O etc. Some have only outer gussets, ie M, C, H. Begin sewing by attaching a gusset edge to the outer curve of one letter piece. Start at any corner and work all round in small glove stitch (fig.3).

If the letter has sharp cor-

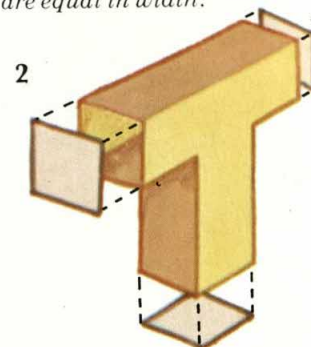
ners (M, N, T) it is best to piece the gusset strip from corner to corner as the stitching of these joins will give better definition to the letter shape (fig.4). Where edges meet, overlap the ends slightly and then stitch together. Now do inner curves in the same manner. Join the second letter shape to the remaining edge of gusset strip.

If the letter has no square ends leave an opening for the stuffing.

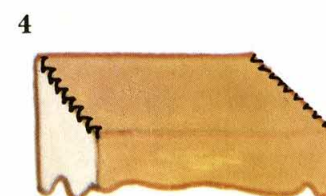
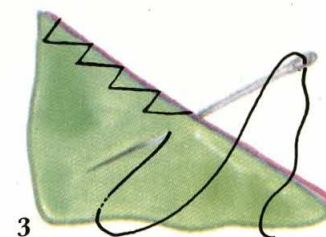
Fill firmly with kapok then stitch squares to ends and close up other openings.



1. Gusset and letter shape are equal in width.



2. Closing square ends.



3, 4. For glove stitch bring needle through same hole twice to make neat corners.

Designed by Jane McCarthy.

Intriguing animated cards

Paper 31



Home-made cards are, of course, far more individual and personalized than the shop-bought variety—and therefore give greater pleasure. The making of them can also provide hours of fun: first thinking up ideas particularly suited to the recipient, then actually painting and cutting the design.

By virtue of their movement, animated cards are particularly intriguing—both to design and to receive. In fact they are really lovely jokey toys as well as cards, and liable to remain on the mantelpiece and to be enjoyed long after most other cards have been relegated to the wastepaper basket!

The basic principles

The cards illustrated here work on three different principles. The effect of the dog wagging his tail is achieved by means of a pivoted lever. The juggling clown is operated by a revolving disc. The bird turning around in its cage uses a sliding central card to produce

alternate images. When the sliding card is pushed to the left, the first image is visible and the second is hidden. When the sliding card is pushed to the right, the first image disappears and the second springs into view.

You don't need to be a great artist, to make these types of cards. (You could always trace pictures from books or even use magazine cut-out figures if you don't feel up to drawing the images yourself.) But you do have to make careful calculations and accurate cuts to ensure that the animation works correctly, so it's worth studying and understanding the principles involved before trying your own designs.

If you follow the detailed instructions given here, you will find that, although challenging, none of the cards is very difficult to make. And, once you have completed one or two cards, you will probably feel ready to adapt the principles to your own designs.

The dreaming dog card

You will need:

Bristol board or similar thin card measuring 50cm x 10cm (20"x4").
Scalpel and pair of compasses.
Ruler, soft pencil and rubber.
Coloured felt-tipped pens, or paints.
Small round yellow gummed paper shapes.

A paper fastener and paper adhesive.

□ Cut three pieces of card each measuring 15cm x 10cm (6"x4") and mark them A, B and C with a soft pencil.

□ Cut one piece of card measuring 3cm x 10cm (1¼"x4") and mark it with the letter D.

□ Place card A horizontally on the cutting table. Rule a 2.5cm (1") square, using the bottom left hand corner of the card to represent two sides of the square (fig.1).

□ Set your compass at a radius of 2.5cm (1"). Place the compass point in the top right hand corner of the square and draw a quarter of a circle into the left hand corner of the square (fig.1).

□ Place card C immediately under card A and cut along the semi-circular line to make rounded corners to both cards.

□ Rub out pencil calculations and trace the dog shape, but not its tail, on to card A. Line it up so that the base of the dog's feet are 1cm (⅜") from the bottom edge of the card, and the tip of

Trace pattern for 'Dreaming dog'. The pivot lever makes his tail wag.



Pivot
Lever

its nose is 1.7cm ($\frac{11}{16}$ ") from the right hand edge. Colour and add yellow gummed shapes for extra interest.

□ Cut a 1.5cm ($\frac{9}{16}$ ") curved slit round the top of the dog's haunches—that is, where the tail protrudes in the photograph.

□ Place card B horizontally on the cutting table. Rule a 5cm (2") square, using the bottom left hand corner of the card as two sides of the square (fig.2).

□ Set the compass at a radius of 1.25cm ($\frac{1}{2}$ ") and, placing the compass point in the right hand corner of the square, draw a circle (fig.2).

□ From the left hand corner of the card measure 2.5cm (1") up and also across. From each of these points draw a line which touches the sides of the circle as shown. Join the two lines by curving round the upper arc of the circle, then cut out the whole area enclosed by the lines (fig.2).

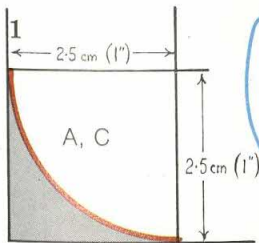
□ Trace the tail and lever (fig.3) on to card D, colour and cut out.

□ Carefully align and glue card B on top of card C.

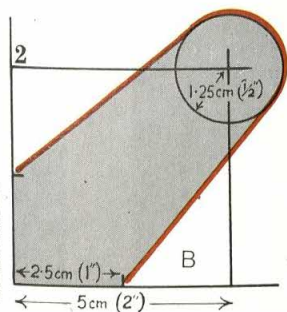
□ Place the tail and lever in position in the cut-out channel in card B, and fasten from the back with a paper fastener.

□ Spread glue over card B and stick it to the reverse side of card A, being careful to align the cards carefully and remembering to slide the tail through the slit in card A before finally sticking down.

□ By moving the lever up and down the dog will wag his tail.



1. Make a rounded curve for bottom left-hand corner.



2. Cut out flare-shaped shaded area to allow for movement of pivot lever.

3. Lever and dog tail trace pattern



The juggling clown card

You will need:

Bristol board or similar thin card measuring 24.5cm x 36cm (10"x15").

Scalpel and a pair of compasses.

Ruler, soft pencil and rubber.

Coloured felt-tipped pens, or paints.

Round gummed paper shapes, in two sizes.

3 paper fasteners.

Paper adhesive.

□ Cut two pieces of card each measuring 11.5cm x 18cm ($4\frac{1}{2}$ "x7") and mark them A and B with a soft pencil.

□ Cut one piece of card measuring 13cm x 18cm (5"x7") and mark it with the letter C.

□ Take card A, place it vertically on

Clown card is actual size and can be used as trace pattern. When the disc is spun, this charming clown appears to juggle balls in the air. Disc is fixed with paper fastener which doubles as a shirt button. All cards designed by Kevin Caston.

the cutting table, and rule a line right down the centre of the card. Then rule a horizontal line across the card 7.5cm (3") from the top (fig.4).

□ Place the compass on the point where the two lines cross, and draw a semi-circle with a radius of 4cm ($1\frac{1}{2}$ ") above the horizontal line. Increase the radius to 5cm (2") and draw another semi-circle. Round off the bottom of

these lines just below the horizontal line and cut out the area enclosed by them (fig.4).

□ Also cut a very small hole, just large enough to take a paper fastener, at the point where the vertical and horizontal lines meet.

□ Rub out the pencil lines and trace or draw the clown on to the card, cupping his hands round each end of the cut-out arc. Colour, using gummed paper circles for faces of audience, eyes, nose, buttons etc.

□ Cut two small holes underneath the one already made in the clown's shirt. Place a paper fastener in each of these two holes to represent buttons. Do not place the other (top) paper fastener in position at this stage.

□ Place card C on the table in a vertical position. As before, rule one line down the centre of the card and a second across it 7.5cm (3") from the top. Draw two more vertical lines on the card 7.5mm ($\frac{1}{4}$ ") from the side edges (fig.5).

□ Cut a small hole in the centre of the disc, just large enough for a paper fastener.

□ Colour the disc the same shade as used for the background of the clown.

□ Place the disc behind card A and attach with a paper fastener using the prepared holes. The front of the paper fastener now becomes the clown's top shirt button.

□ Stick the round paper shapes through the cut-out arc on to the disc, spacing them at regular intervals and turning the disc until a full circle of juggling balls is made.

□ Glue parts 2 and 3 of card C on to card B, aligning them carefully at top and bottom. Then glue them on to the back of card A, taking care to see that no glue touches the disc.

□ By spinning the disc the clown will now appear to be juggling the balls from one hand to the other.

The birdcage card

You will need:

Bristol board or similar thin card measuring 20cm x 30cm (8"x12").

Scalpel and a pair of compasses.

Ruler, soft pencil and rubber.

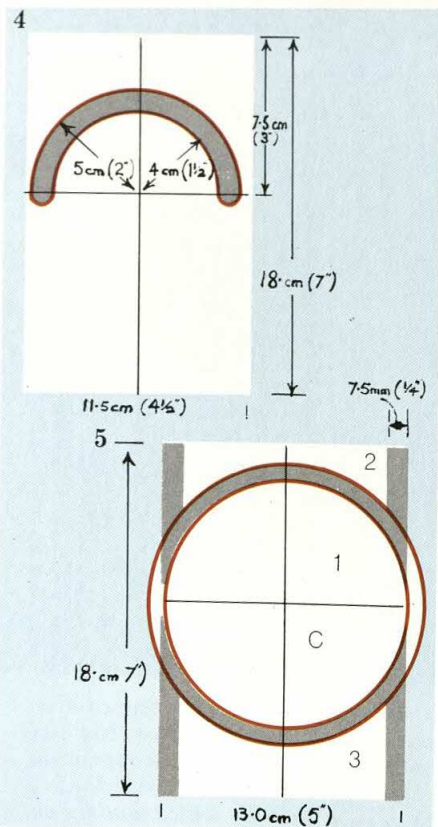
Coloured felt-tipped pens, or paints.

Paper clips and paper adhesive.

□ Cut the card as shown in fig.6 and mark A, B, C, D and E in soft pencil.

□ Place card A vertically on the cutting table. Draw a line down the centre and parallel lines across it, one 1.5cm ($\frac{5}{8}$ ") from the bottom of the card, and the other 7.5cm (3") above the first line (fig.7).

□ Draw the bars of the cage between these two lines. Each bar (and the space between bars) should be 3mm ($\frac{1}{8}$ ") wide. There should be thirteen bars in all, with twelve spaces between them. The central (seventh) bar should be drawn in first—half of it being to the



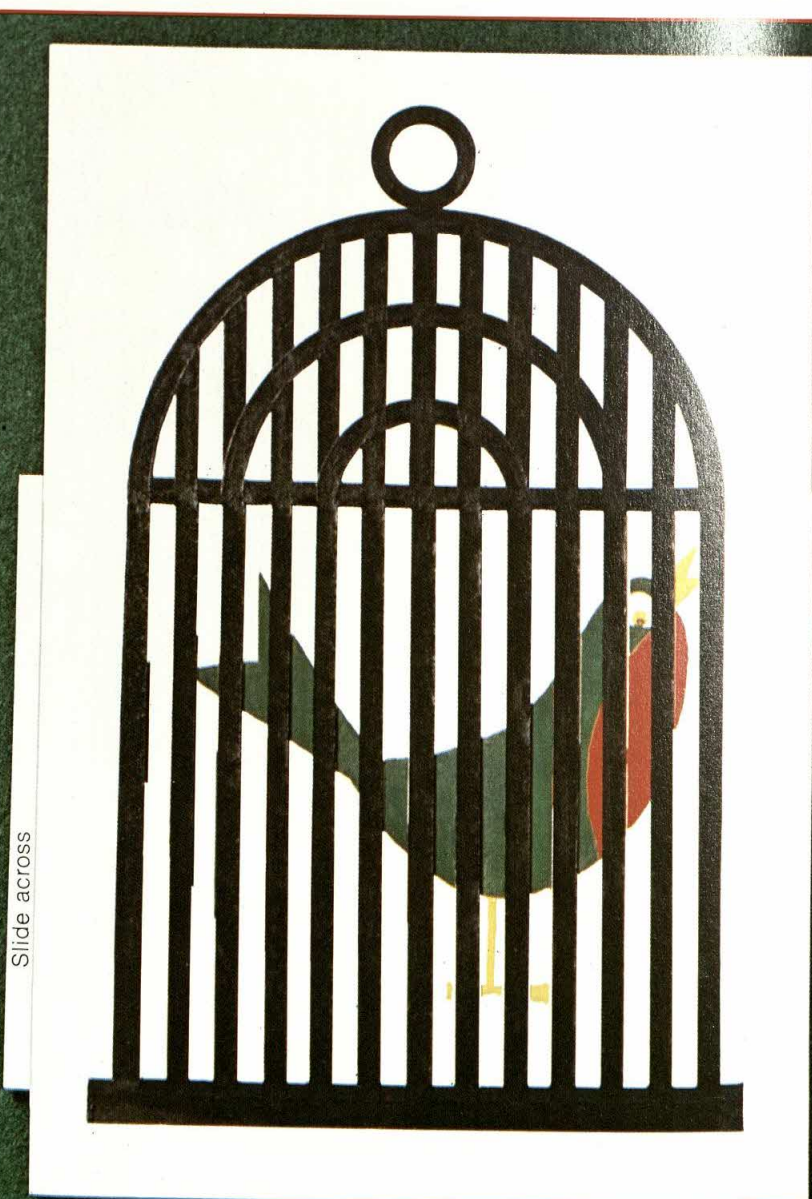
4. Cut-out arc allows revolving images on the disc to be shown through.

5. Measuring and cutting the disc.

□ Place the compass at the point where the horizontal and first vertical lines meet, and draw a circle that just touches the sides of the card. Open the compass another 2mm ($\frac{1}{16}$ ") and draw a second circle (fig.5).

□ Cut the card into three pieces and trim away waste as shown by the shaded areas in fig.5.

Dick Miller



When sliding card is pushed left, red-breasted bird is visible. Slide card right

left, and half to the right of the original vertical line (fig.7).

□ Cut out the twelve spaces between the bars. Do this very carefully because the more accurate your measuring and cutting, the better the card will work.

□ Rule lines to represent the base and top of the cage, and use a compass to draw the semi-circular dome to the cage top. Colour the cage bars.

□ Glue cards C and D to the reverse side of card A, aligning the top of card C with the top of card A, and the bottom of card D with the bottom of card A.

□ Place card E in the slot so that the right hand edges of cards E and A are flush. Hold in place with paper clips. Run a pencil around the inside of the bars so that the bar and space shapes are drawn on to card E (fig.8).

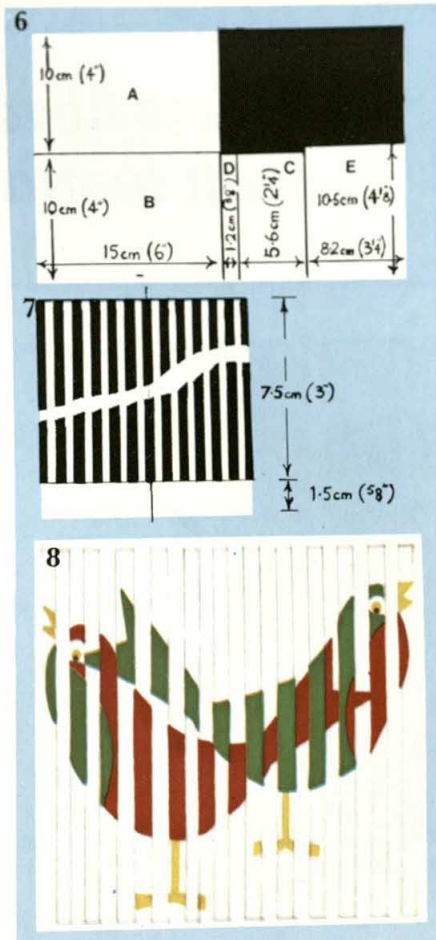
□ Remove card E and, starting with the beak in the far right hand space,

draw in one bird in alternate sections. Colour, keeping your colours just within the lines to ensure the bird will disappear successfully when the card is slid back and forth.

□ Then draw the second bird, in a reverse position, using the bar spaces left blank by the first bird. Start with his beak on the far left hand side just *beyond* the first bar space (fig.8). Again keep your colouring within the lines, and use a different colour scheme for added interest.

□ Spread glue on cards C and D, place card E between them, painted side downwards, then stick backing card B into position.

□ Sliding the central card to and fro will now create the impression of coloured birds turning around in the cage. The faster you slide the card, the more dramatic the effect of hopping movement and changing colours.



6. Pattern for the birdcage card.

7. Accurate measuring and a sharp knife are needed to make the cage bars.

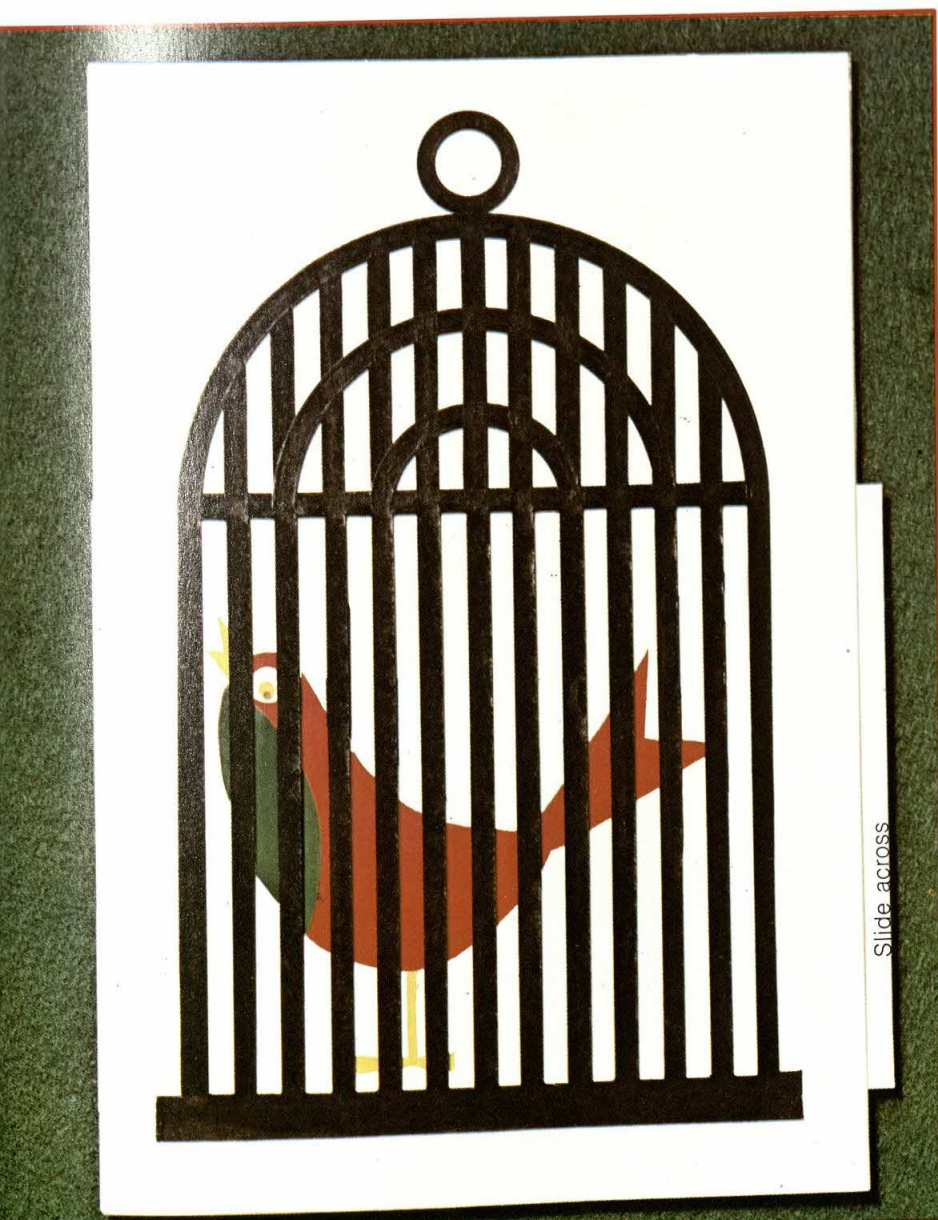
8. Starting from right, first bird is painted into alternate spaces. Second bird slots into gaps left by the first.

Designing your own adaptations

There are of course literally hundreds of designs and pictures that can be animated by using one or other of these techniques. It is great fun thinking up your own ideas, and devising the mathematical calculations needed to make them most effective.

Don't feel that the pivot lever principle is restricted to pictures of animals wagging their tails. It can be adapted for all sorts of movement. For example to make a figure raise a glass for a toast; to show a kitten cleaning itself with its paw; to show a soldier saluting, a footballer kicking a ball, a policeman waving on traffic, or a couple shaking hands.

Equally, the revolving disc need not show identical images at every turn. For instance, it could show an aeroplane sky writing a message of greeting that is gradually revealed as the disc is rotated; or a group of different figures—men, women and children—walking on the bridge over a railway tunnel.

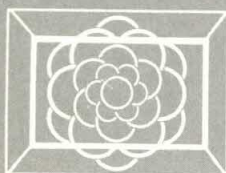


Slide across

and green-breasted bird appears instead. Card shown is actual size.

Glass fibre screen to make

Plastics 15



Polyester resin and glass fibre in combination can make a number of useful and attractive objects such as the moulded tray and lampshade in the previous two chapters or the screen which is illustrated here.

This screen can be simply made from two layers of impregnated glass fibre. The result is thin, lightweight, quite strong, either coloured or water-clear and embedded, if you wish, with dried leaves, ferns, flowers or feathers; alternatively, try cut-out paper shapes or strips of material.

A glass fibre screen

The screen will transmit light and is decorative as well as practical. It can be used for a bathroom window, in front of a light source, or as a shower screen.

For a screen 1.2m x 0.75m (4'x2'6")

You will need:

Tools

See Plastics chapter 13, page 1014.

Strip of card about 12.5cm x 5cm (5"x2").

Materials

Glass fibre is bought by the metre (yard) and you will need:

Surfacing tissue, 2.7m (9').

Chopped strand mat, either a small piece or one or two scraps for shaking over the screen.

Rigid laminating resin, 2.5kg (5½lb).

Catalyst (hardener). You will need most of a 56gm (2oz) bottle.

Resin pigment (optional).

Dried ferns, leaves, flowers, or feathers for embedding.

Cellophane or plastic sheet such as Melinex just over twice the size of the screen.

Masking tape or other adhesive tape.

Flat board the size of the screen and weights (or heavy books) to press it down.

Acetone or polyester detergent for cleaning tools.

Silicon carbide wet and dry abrasive paper.

Metal polish such as Brasso.

Barrier cream or rubber gloves.

Large apron or overall.

Newspaper.

□ Open the window to ventilate the room, put on an apron or overall and cover exposed areas of skin with barrier cream.

Use a flat, smooth tabletop or working surface at least 1.2m x 0.75m (4'x2'6") in area.

□ Cut a piece of cellophane or Melinex 1.2m x 0.75m (4'x2'6") plus a little extra all the way round. If a join is necessary overlap the edges by 2.5cm

Frame the screen, fit with hinges to the wall so that it runs along the top edge of the bath for an effective shower screen. Designed by Norman Fisher.

1"), tape all along the join with adhesive tape and turn over.

□ If you are using cellophane dampen with water and stretch over the working surface. Tape in place using adhesive tape (fig.1). Do not crease the sheet unless you want a crinkled surface to the screen. When the cellophane dries it will stretch very tight and flat and will easily peel off the screen.

There is no need to dampen Melinex, simply tape it to the surface.

The first layer

The gel coat gives a flat, smooth surface to the screen.

□ Weigh out 0.67kg (1½lb) resin. Mix with catalyst which is generally used in the proportion of ten drops of catalyst per 28gm (1oz); with largish quantities of resin such as are needed for the screen reduce the proportion of catalyst to around eight-nine drops per 28gm (1oz).

□ Gently pour the activated resin on to the cellophane and evenly brush it over the surface with a laminating brush or paint brush. Alternatively, spread the resin with the strip of card. Make sure that the resin extends a little outside the area of the screen.

□ Wash out the brush with acetone and allow the resin to gel for about an hour.

Laminating. Mix up 226gm (½lb) resin with a small quantity of resin pigment (if used). Add catalyst and pour evenly over the gel coat. Spread out with the card.

□ At this stage arrange the leaves, ferns or feathers to your design. Place them face downwards. By sitting the objects in a 'puddle' of resin, bubbles of air are discouraged from forming around them (fig.2).

Alternatively, wait until this layer has gelled before placing the objects on top. This method will encourage bubbles which can look very attractive in this type of screen. (You will probably get a few bubbles anyway.)

□ When the resin has gelled cut a layer of surfacing tissue equal to the size of the screen plus a little extra all the way round. Gently place over the objects.

□ Mix up another 226gm (½lb) resin

with catalyst and apply to the gelled coat, thoroughly stippling it into the surfacing tissue and being careful to completely cover the objects.

□ Allow the resin to gel and trim with a trimming knife such as a Stanley knife. Do not leave this to a later stage when you will have to trim with a hacksaw.

□ Allow this half of the screen to harden overnight, remove from the working surface and place on a flat surface nearby.

The second layer

The gel coat. Mix up 0.67kg (1½lb) resin with catalyst as before and spread over a fresh sheet of cellophane in an even layer. Allow to gel.

Laminating. Mix up 226gm (½lb) resin with resin pigments (if used) and apply to the outer edge of the second layer to make a border. Leave the centre clear as far as possible. Allow to gel.

□ Hold a piece of chopped strand mat over the screen and shake vigorously so that separate strands of glass fibre fall on to the screen. These will increase the strength of the screen and are practically invisible.

□ Cut a layer of surfacing tissue equal to the area of the screen plus a little extra. Place over the gelled resin.

□ Mix up 0.45kg (1lb) resin with catalyst. Leave this resin clear. Impregnate the surface tissue, stippling it in thoroughly. Also coat the back of the first layer of the screen with resin.

Joining. Carefully lay the first layer wet side down on top of the new side. It will be possible to slide the top part a few inches to adjust but, if you do, take it slowly and gently and do not try to lift it off.

□ Using a trimming knife trim the bottom layer flush with the top using the top edges as a guide.

□ Place a flat board on top of the screen and weight it down. Leave to set overnight.

Finishing. If you are fixing the screen into a frame there will be no need to smooth down the edges (fig.3). If they do need smoothing rub with wet silicon carbide abrasive paper. Leave the cellophane for as long as you can and then peel off. Polish with a metal polish such as Brasso.

Order of working

1st layer

Table

Cellophane

Gel coat (outer layer)

Resin (with pigment)

Feathers

Surfacing tissue

Resin

2nd layer

Table

Cellophane

Gel coat (outer layer)

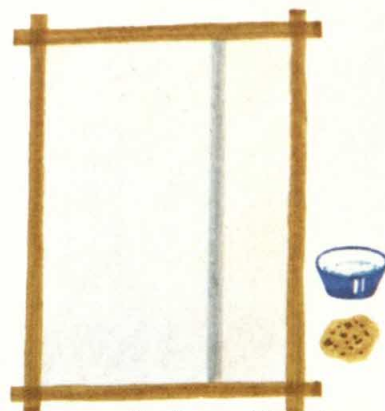
Resin (with pigment)

Chopped strand mat

Surfacing tissue

Resin

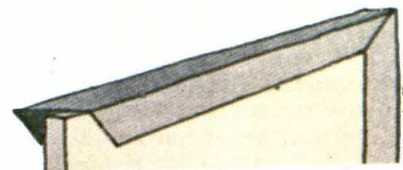
Join the two final resin layers with more resin to make the screen.



1. Dampen cellophane with water, stretch and tape in position.

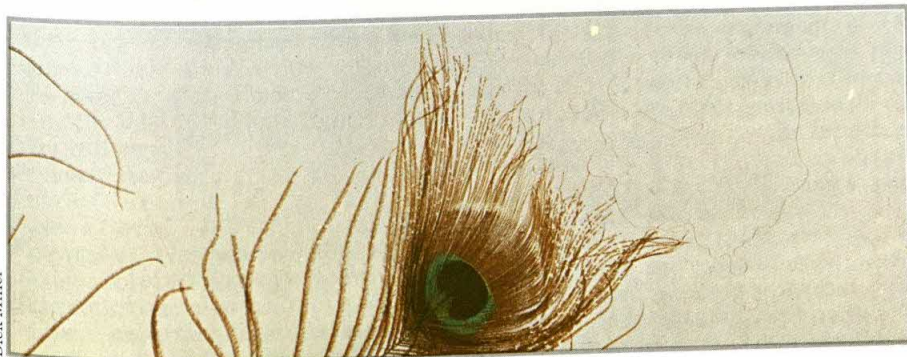


2. Place feathers face downwards on to resin and carefully adjust.



3. Plastic slide binders give a firm, smooth finish to the screen.

Detail showing bubble texture.



Preparation of frames; Tiffany shades

Cloth — lampshades 2

Careful preparation of the frame is essential for lampshade making because it determines the final appearance and long-lasting wear of the shade. The preparation is done in two stages: cleaning and painting the frame to ensure that it does not tear the fabric and stain it through rusting when the lampshade is washed, and binding it with tape to give a foundation to which the fabric can be pinned and stitched.

To prepare the frame

You will need:

Metal file, wire wool, old newspapers. Paint in white or to match your cover fabric. Use a quick-drying cellulose paint (such as is sold for touching up car bodywork) or an enamel (such as Humbrol).

Small soft brush.

White cotton tape, 1.5cm ($\frac{1}{2}$ " wide. Use a loosely-woven tape sold for the purpose (this can be dyed to match your cover fabric). You can use bias binding (with one crease opened out) but it is not recommended because its edges tend to fray and it is more bulky than the special tape.

Needle and sewing thread to match the binding.

□ Examine the frame carefully and use the file to remove any sharp points where the struts are joined to the rings. Clean the frame by rubbing with the wire wool.

□ Stand the frame on newspaper and paint it. You may have to do this in two or more stages so that you can reach all sides of the rings without smudging. The paint is usually touch dry quite quickly but leave the frame for 24 hours so that it can harden before you bind it.

Binding the frame. This is the most important stage of the preparation. The binding must be very tight or it will slip and the fabric will not be tautly stretched over the frame however much time you spend on the fitting. For most styles of lampshade the rings and two struts, on opposite sides of the frame, are bound so that the fabric can be pinned and fitted on to them.

The binding on the struts is then removed because it is no longer needed but it is kept on the rings so that the cover can be stitched in place. This is

a modern development of lampshade making: traditionally all the struts were bound and the binding remained on the finished lampshade, which sometimes had the disadvantage of showing through as ridges.

The main exceptions to this are square and other panelled styles where the fabric is fitted and stitched to each side of the frame individually, in which case all the struts must be bound. A neater effect is achieved if the struts are bound before the rings.

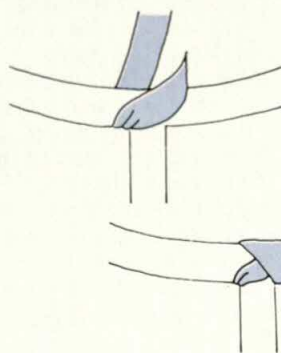
□ To bind the top ring cut a piece of tape equal to twice the length of the

circumference. Place one end of the tape under the ring at the top of a strut, bring the tape over the joint and bind over the end of the tape. Continue binding the ring as tightly as possible, keeping the tape at an acute angle and overlapping the previous wrap slightly (fig.1).

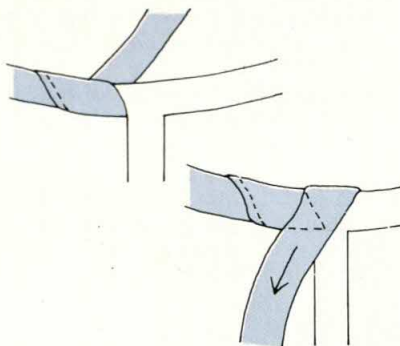
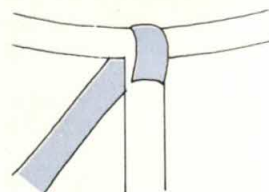
□ At each strut, wrap the binding around the ring an extra time before you reach the strut and then go on to the next section on the other side of the strut (fig.2). To finish, stitch down the end of the tape on the outside of the ring.

□ Turn the frame upside down and bind the bottom ring in the same way.

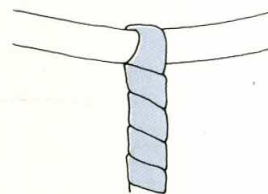
□ To bind the struts, cut a piece of tape twice the length. Start at the top and loop the end round the T-joint (fig.3). Bind over the end and continue winding tightly down the strut. Finish by winding round the ring on both sides of the strut and pull the end through a previous loop (fig.4). There is no need to trim off the excess tape unless the binding is to remain on the finished lampshade.



1. Starting to bind the rings so the end of the tape is covered.



3. Starting to bind struts by looping end of tape round the T-joint at the top.



2. Wrapping tape round ring an extra time before each strut.

4. Finish off at foot of struts by wrapping round the ring on both sides and pulling end through.



Jerry Tubby

Tiffany lampshades

These are the simplest kinds of lampshade to cover because they do not require the elaborate fitting of a fully tailored style.

The frame is traditionally bow-shaped and has twelve struts. The cover is semi-fitted so that it fits the bottom tightly but is gathered to fit the much narrower top, and it looks prettiest in a light cotton or broderie anglaise fabric. It is often trimmed with a heavy fringe which gives it its distinctive character or a scalloped or lace trimming could be added for a lighter effect.

You will need:

Prepared frame.

Fabric (see below).

Sewing thread.

Equipment (see Lampshade making chapter 1, page 1164).

Trimming (see below).

Fabric requirements. Measure the frame at its widest part (this is not

necessarily the bottom ring). If the measurement is less than the width of the fabric, the cover can be made in one piece. If it is more than the width of the fabric, the cover should be made in two halves.

□ Measure the length of the struts and add 9cm (3½"). If you are making the cover from one piece of fabric, allow enough to cut one piece on the straight grain to the length of the struts plus 9cm (3½") x the measurement of the circumference of the widest part plus 2.5cm (1"). If you are making it in two halves, allow enough to cut two pieces on the straight grain to the length of the struts plus 9cm (3½") x the measurement of half the circumference plus 2.5cm (1"). If you are making a scalloped fabric trimming, allow enough to cut a strip of the measurement of the circumference of the bottom ring plus 2.5cm (1") x 12.5cm (5").

Fitting the cover. Cut out the fabric

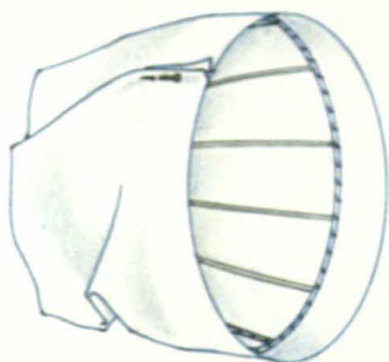
Broderie anglaise makes a pretty cover for a Tiffany lampshade. When cutting the trimming place the edge along the scalloped selvedge of the fabric to give a neat finish.

to the measurements given. If you are using one piece, fold it in half with the shorter edges together and mark the fold with tacking. If you are using two pieces join them using one of the methods given overleaf.

□ Place the fabric with the right side facing out on to the frame so that the seam or line of tacking is level with one of the bound struts. Centre the fabric on the length of the strut so that 4.5cm (1¾") extends at the top and bottom. Pin the seam or tacking line to the bound strut in one or two places in the middle.

□ Wrap the fabric round the frame and pin the edges together in line with the opposite bound strut so that the cover

fits tightly at the widest part of the frame but does not distort the fabric (fig.5). Remove the fabric from the frame and tack along the straight grain level with the pin.



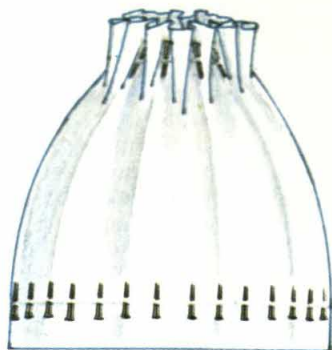
5. Pinning the fabric round the frame.

Joining the fabric. The fabric may be joined in one of three ways, depending on your own preference and the fabric you are using.

The two main methods are either to use a plain seam and trim the turnings to 3mm ($\frac{1}{8}$ ") and neaten the edges together by overbasting or a machine zigzag stitch; or you could use a French seam. Alternatively, if you are using broderie anglaise with a scalloped edge, you could overlap the scalloped edge over the plain edge by 6mm ($\frac{1}{4}$ ") and machine stitch.

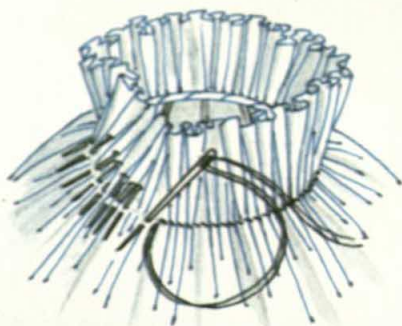
Stitching the fabric to the frame. Place the cover on the frame as before, with the right side facing out, and pin it to the binding along the bottom ring. Place the pins so that the points face into the body of the lampshade so that you are less likely to scratch yourself. Smooth cover up the line of the struts, keeping the grain straight, and pin at the top of each strut.

□ Fold away the fullness between the struts into tiny pleats and pin them. Repeat along the bottom ring if this is narrower than the widest part of the frame (fig.6).



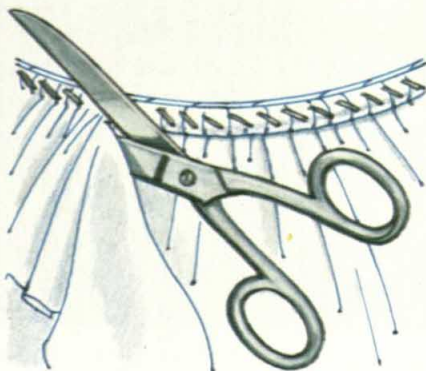
6. Folding the fullness into pleats.

□ Start stitching the fabric to the binding on the outside of the rings using a small oversewing or hemming stitch. Work in a clockwise direction around the ring, making sure that you catch the gathers firmly in position. Use doubled thread and begin and fasten off securely, using several small back stitches (fig.7).



7. Stitching round the top ring.

□ Turn the surplus fabric back over the stitching so that the fold is level with the edge of the rings, and stitch through all thicknesses. Trim surplus fabric close to stitching (fig.8). To finish, see scalloped or fringe edging.



8. Trimming away the surplus fabric.

Scalloped edging

You will need:

Fabric, 12.5cm (5") wide x the measurement of the circumference of the bottom ring plus 2.5cm (1").

Strip of paper, 10cm (4") wide x the measurement of the circumference of the bottom ring.

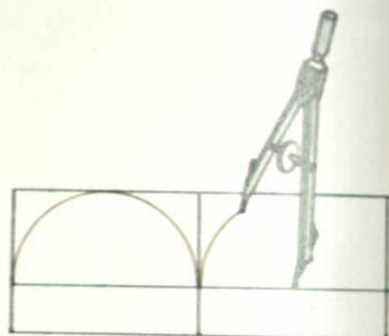
Compasses, ruler, pencil.

Velvet ribbon, the measurement of the circumference of both rings plus 1.5cm ($\frac{1}{2}$ ") for turnings.

Clear adhesive (such as Bostik 1).

□ Measure the distance between the struts on the bottom ring and divide the paper into sections of this measurement. Draw another line half this measurement away from one long edge of the paper.

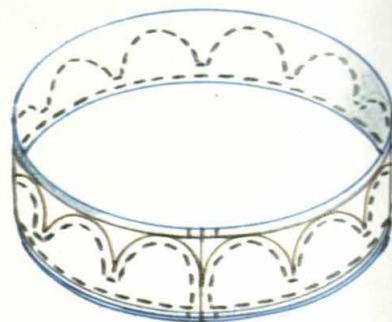
□ Using a radius of the same half measurement, place the point of the compasses on the long line in the centre of each division and draw a semi-circle (fig.9). Repeat along the length of the paper.



9. Drawing the scallop pattern.

□ Place the fabric strip around the bottom ring with the wrong side facing out and pin the short edges together so that the strip fits the ring exactly. Remove the strip and machine stitch along this line. Press the turnings open.

□ Fold the circle of fabric along the length to make it 6.25cm (2 $\frac{1}{2}$ ") deep with the wrong side facing out. Place on the paper pattern so that the edge with the curves is 5mm ($\frac{1}{4}$ ") from the fold and the short edges of the paper meet on the seam line. Tack the paper to the fabric along each edge (fig.10).



10. Tacking the pattern to the fabric.

□ Machine stitch along the curves through all thicknesses, following the drawn line. Tear away the paper carefully and trim the fabric to within 3mm ($\frac{1}{8}$ ") of the stitching. Clip into the angle between each scallop.

□ Turn right side out and tack along the curved edge so that the seam is exactly on the edge. Press.

□ Place the trimming on to the lampshade so that the raw edges are in line with the turned-up edges of the cover. Stitch in the same way as the cover.

□ Fold under one edge of the ribbon for 6mm ($\frac{1}{4}$ ") and place in line with the seam of the cover so that it covers the

raw edge and stitching of the trimming. Smear some adhesive along the underside of the ribbon and smooth the ribbon down on to the ring, keeping it as straight as possible. At the end, fold under to meet the first fold and press firmly to make sure that it is securely fixed.

□ Place the ribbon around the top ring to cover the raw edges and stitching in the same way.

Fringe edging

You will need:

Fringe, the measurement of the circumference of the bottom ring plus 1.5cm ($\frac{1}{2}$ " for turnings.

Co-ordinating braid, the measurement of the circumference of the top ring, plus 1.5cm ($\frac{1}{2}$ " for turnings.

Clear adhesive (such as Bostik 1).

□ Fold under one end of the fringe for 6mm ($\frac{1}{4}$ ") and stick down with a spot of adhesive. Place the fold on to the bottom ring so that it is level with a seam and the top edge of the fringed section is level with the edge of the ring. The braided or solid section along the top edge of the fringe must cover the binding on the ring, the raw edges and stitching of the fabric.

□ Apply adhesive for about 10cm (4") along the underside of the braided section and place it in position on the ring, stretching it slightly. Secure with a pin. Apply adhesive to the next 10cm (4") and stick down as before. Keep checking that the braid is level with the rings as you progress. When you reach the other end, fold it under to meet the first fold exactly and stick down. Secure with a pin.

□ The braid is attached to the top ring in a similar way but the outer edge should be pinched up slightly with your fingers so that the inner edge will lie flat.

Friiled edging

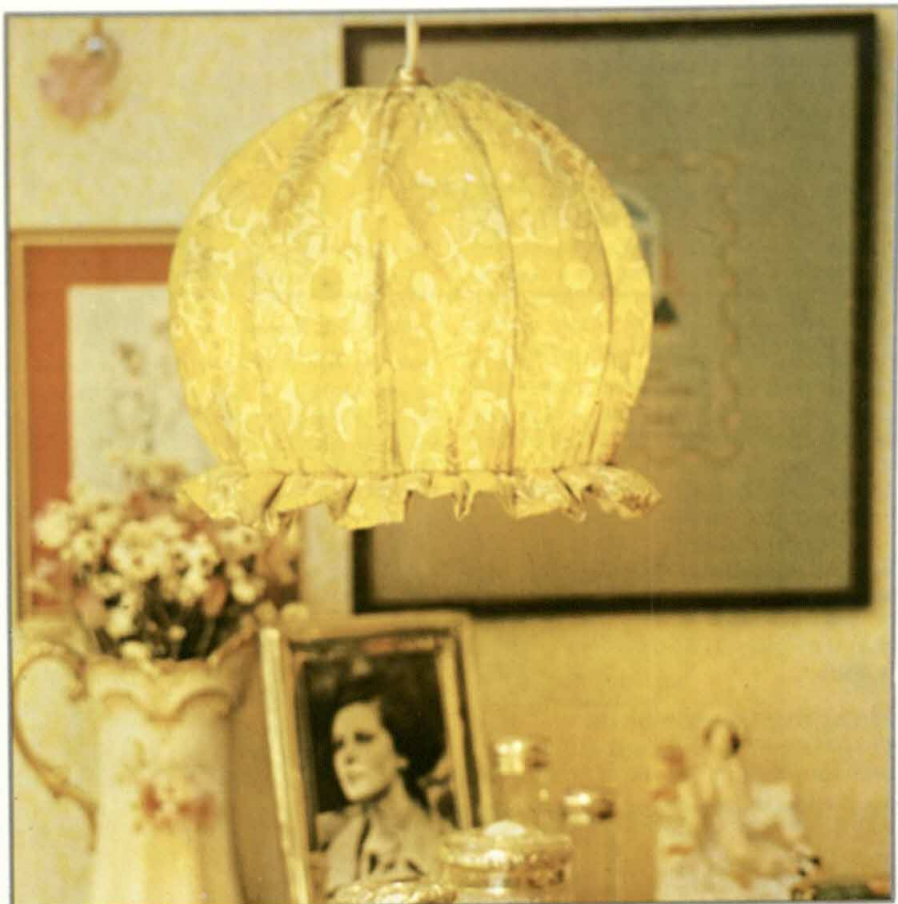
You will need:

Fabric, 10cm (4") wide x $1\frac{1}{2}$ times the circumference of the bottom ring.

Ribbon, the measurement of the circumference of both rings plus 1.5cm ($\frac{1}{2}$ ")—optional.

□ Place the short ends of the fabric strip together with right sides facing and machine stitch taking 5mm ($\frac{1}{4}$ ") turnings. Press open the turnings.

□ Fold under the edges of the fabric circle on to the wrong side for 5mm ($\frac{1}{4}$ "), tack and press. Fold the circle in half along the length with the right side facing out. Work a row of gathering stitches through all thicknesses 5mm ($\frac{1}{4}$ ") from the open edge of the circle and pull up the gathers to fit the bottom ring. Pin and stitch round the ring and cover the stitching with ribbon. Cover the raw edges at the top with ribbon as for a scalloped edging.



Geoffrey Frosh

Easy Tiffany cover

One of the easiest and quickest ways of covering a Tiffany frame is to make a detachable cover. This method has the extra advantage in that the cover can easily be removed for washing, and you do not need to bind the frame because the cover is not fitted or stitched directly to it. It is, however, advisable to paint the frame.

You will need:

Fabric (for the amount, see Fabric requirements, Tiffany lampshades).

Elastic, 6mm ($\frac{1}{4}$ ") wide x the circumference of the bottom ring.

Cotton tape, 6mm ($\frac{1}{4}$ ") wide x the circumference of the top ring, plus about 10cm (4").

Bodkin, needle, sewing thread, pins.

Edging, as already described.

□ Start as if you were making a semi-fitted cover and join the fabric so that

Removable Tiffany cover is easy to sew.

it fits the widest part of the frame.

□ Fold over 5mm ($\frac{1}{4}$ ") on to the wrong side along both the edges of the fabric and press. Fold over 1.5cm ($\frac{1}{2}$ ") again to make casings and tack and machine stitch, leaving openings in the stitching of about 1.5cm ($\frac{1}{2}$ ").

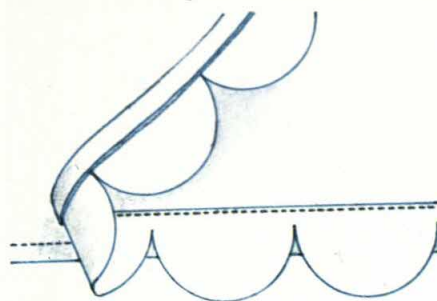
□ Pin and machine stitch the trimming 2.5cm (1") above the lower edge of the cover (if you have a scalloped trimming, fold under the raw edges and topstitch them to the cover as in fig.11—it is not necessary to use ribbon to cover the stitching).

□ Thread the elastic through the casing along the lower edge of the cover, draw up the elastic and pin the ends together.

□ Thread the tape through the casing along the upper edge of the cover.

□ Place the cover on the frame so that the trimming is positioned on the lower ring. Draw up the elastic tightly to draw the margin of fabric under the frame. Pin and stitch the elastic at the required place and trim off the excess. Arrange the gathers of fabric neatly.

□ Arrange the fabric neatly on the frame at the top and draw up the tape so that the cover is firmly held over the frame making sure the trimming is still correctly positioned. Tie the tape neatly and trim off the excess length. Stitch up the openings in the casings.



11. Top stitching the edging.

Flower balls, fantasy trees

Flowers and plants 8



Using floral foam and material which you have dried yourself (Flowers and plants chapter 5, page 584) or that you have bought from florists or herbalists—you can create a number of floral decorations that will add a festive note to your home and can then be stored away and used again when you feel like it. To get a more fanciful or unusual effect you may prefer to dye some of the material. Flowers and plants chapter 7, page 1170, describes how this is done.

Hanging flower balls

These elegant decorations can be made very simply and the type of flowers and

colours you choose will lend a mood to each. Masses of tiny flower heads are usually used for this kind of arrangement in order to keep the ball as round as possible in shape. Some flowers which are suitable are everlasting flowers like *ammobium alatum grandiflorum* (sand flower), *anaphalis* (pearl), *helichrysum* (straw flower), and *lunaria annua* (honesty); also sea lavender, *nigella* (love-in-a-mist), *astrantia* (masterwort) and *catananche* (cupid's dart).

You will need:

Ball of dry florists' foam (Oasis), 5cm (2") in diameter, available from florists.

Kitchen foil (optional).

2 knitting needles, a thick and a very thin one (or similar long pointed tools). Ribbon: about 1m (1yd) of very narrow ribbon, and a length of wider ribbon twice the diameter of the ball plus enough to make a long loop.

10 large pearl beads.

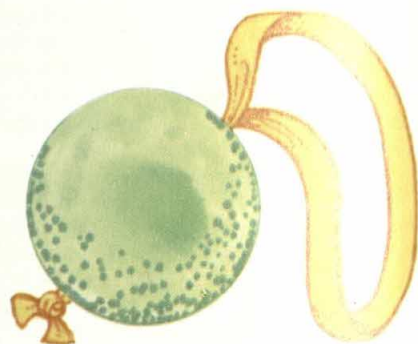
Fine wire for binding.

Selection of dried material: in this case straw flower and honesty.

General-purpose glue (optional).

□ Take a ball of dry florists' foam and cover it with kitchen foil. The foil is not absolutely necessary, but it helps to seal the foam and so prevent it from crumbling.

□ Using a thick knitting needle, push a hole through the centre of the ball and work both ends of the wider ribbon down through the hole by poking them with the smaller knitting needle. Knot the two ribbon ends together when they emerge at the base. The loop at the top is used to hang the flower ball (fig.1).

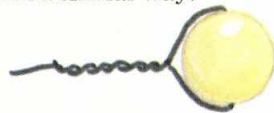


Lesley Fox

1. Insert ribbon through floral foam.

□ Cover the surface of the ball with dried material which has had the stems cut to 2.5cm (1") or less. You can use the same flowers throughout or work according to a predetermined plan or design using, for example, a geometric arrangement. If the stems are delicate, make a hole with the fine knitting needle before pushing the stems in to prevent them breaking. In which case, you might even add a dab of glue to make sure they stay in the pierced holes.

□ Thread each pearl on wire, twisting the ends together to form stems (fig.2), to add in a similar way.



2. Thread beads on wire and twist.

□ Tie the narrow ribbon into small bows, put a pin through the centre and stick it into the ball.

Elegant flower ball suggests a jewelled pomander and is made on a base of floral foam. By Pamela Woods.



Cone tree

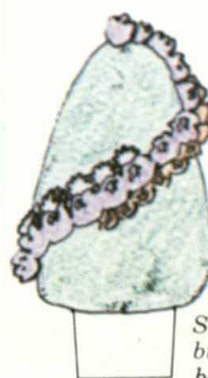
Cone-shaped trees are made with floral foam which can often be purchased already in cone shape from florists' shops. A base can be made with an upturned egg-cup with the foam shape glued on top. If you choose a wooden base, it can be dyed with fabric dye along with dried plant material to complement your colour scheme (fig.3). Add the dried material starting from the base. Put the largest shapes at the bottom and add smaller and smaller pieces as you get to the top.



3. Foam glued to upturned wooden eggcup, dyed to match dried plant materials.

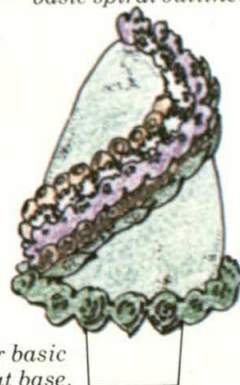
For a first attempt it is a good idea to use dried leaves around the base and build up the design with seed heads, beech nuts, berries and perhaps some of the everlasting flower heads such as straw flower or sand flower. As you get to the top, keep the shapes as neat and rounded as possible to avoid throwing the cone shape off balance.

The poppy seeds in the cone tree shown provide a dramatic contrast to the tiny dried flowers, and the quaking grasses which shake with the slightest disturbance give a shimmering effect.

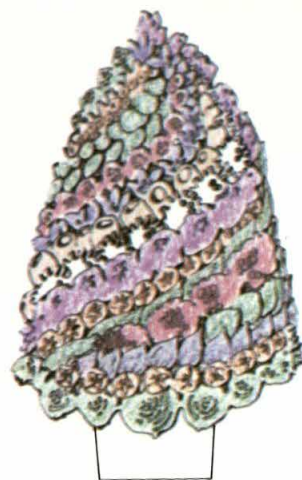


Alternative spiral design

Step one: start by building up one basic spiral outline.



Step two: after basic outline, start at base.



Step three: Fill in remaining gaps.

'Whispering cone' tree whose fragile grasses shiver at the slightest disturbance, giving a shimmering, life-like effect.

Sue Richards

Large-sized cone trees. For really large dried material—big cones, Chinese lanterns, whole clusters of hydrangea and berries—you may need to make your own base from wire mesh.

To make a mesh base you will need: Newspaper or other paper for pattern. Wire mesh with 1.2cm ($\frac{1}{2}$ ") holes for cone.

Wire cutters or floral scissors.

Fine wire or twine for binding edges together.

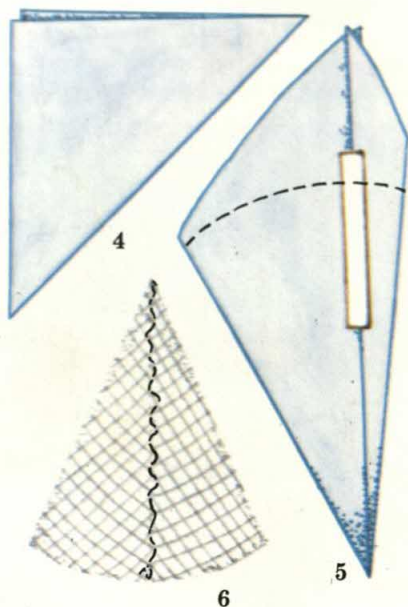
Crumbled florists' foam.

Masking or adhesive tape.

□ Make a pattern from a piece of paper by folding a square shape in half to make a triangle (fig.4).

□ Join the two short sides with a piece of tape so that they form a cone shape, and trim the base evenly so it can stand upright (fig.5). Then cut the tape and stretch out pattern over wire mesh.

□ Cut round the pattern with shears and join the edges of the wire by binding them with fine wire or twine (fig.6).



Lesley Fox

Pattern for mesh base used for large cone trees. 4. Fold square in half on the diagonal. 5. Tape sides together and trim edge to make it even. 6. Cut out pattern in wire mesh and bind edges together with fine wire.

□ Line the inside of the cone with the newspaper pattern and fill the interior with crumbled foam, packing it tightly.

□ Seal off the base of the cone by putting overlapping strips of tape across it, preferably making two layers—the second at right angles to the first. This completes the cone shape which can now be decorated in the same manner as for Hanging flower balls.

Fir cone tree made of natural and bleached fir cones is a handsome year-round arrangement. Pamela Woods.



Tony Page

'Bay' trees

Round bay trees standing on thin stalks in their tubs look like fantasies from Alice in Wonderland, yet they can be carried to even more imaginative dimensions using floral foam and dried materials—and they can be made any size from miniature to 'life'.

You must of course find a pot or tub the right size to 'plant' your tree in. This can be any size of plastic pot, or a wooden tub or paint tin. Plant by sticking the ball of floral foam on top of a rod and securing it in the pot. To prevent your tree from being top-heavy you can weight your container by filling it with sand or small stones.

Remember, these trees can be made in any size. If you can get a huge pot and a big enough pole you can make a really large one to stand in a hall. If you cannot get a large enough piece of foam, you can often have one cut by a floral supplier, or you can use styro-foam. Ask your florist for the supplier nearest to you.

You will need:

Flower pot, tin or tub.

Enough sand or stones to fill the container if it is a large one.

Cellulose filler, plaster of Paris or cement, available from hardware shops.

Thin metal rod or wooden dowelling.

Ball of floral foam such as Oasis.

String.

Dried flower material.

Artificial fruit (optional).

Ribbon and paint can be used according to personal choice.

□ Put a few heavy pebbles in the bottom of the pot and then, if it is a large pot, fill to about 2.5cm (1") below the rim with stones or sand, and cover with plaster or cement.

□ Place a thin rod in the centre and allow it to set in the plaster. The length of the rod should be in proportion to the size of the pot, and this is a matter of personal taste. (Make sure the rod stays vertical while the filler dries and prop it up if necessary.)

□ Take a ball of foam and push it down over the rod until it is embedded about half way. The size of the ball will depend on the size of the pot, or vice versa, and as a general rule estimate that the size of the covered ball will be about twice that of the pot.

□ Wind a piece of string tightly around the rod at the base of the ball to prevent the foam slipping any further down the rod. The string will be concealed by the dried material—or it can be disguised by tying a strip of ribbon over it.

At this point it is a good idea to paint the rod and pot to harmonize with the arrangement and if you plan to do so, try a vivid Chinese red as long as it will not overpower the arrangement,



or a softer gold or bronze paint. Alternatively you could paint the tub one colour, bright green for instance, and give the rod a coat of bark-like brown enamel. Another decorative solution is to wrap the rod in a colourful ribbon or crepe paper, but this should be done later.

□ Add the material to the ball at the top in much the same way as for the cone tree previously described.

Keep all dried material to a stem length of not more than 5cm (2") and, if necessary, mount on stub wires

Delicate little 'bay' tree by Pamela Woods is an example of the fanciful trees in all sizes that can be made by sticking materials into a foam ball.

(Flowers and plants chapter 3, page 524) and then cut wire to this length. Use your largest material first, pushing it closely into the surface before adding the smaller flowers and grasses. An interesting outline can be achieved by varying the length of visible stems. To disguise cement or plaster in the pot you can use pebbles or paint it.

The charm of cross stitch

Yarn — embroidery 7



The design

Because of the box-like nature of the stitch, it looks its best when the design is a geometric pattern or it is a picture with simple, stylized shapes and motifs such as the ones shown overleaf.

The shape of the spaces between the areas is as important as those areas filled with the stitch. Often main areas are left unworked and the spaces suggest detail—a technique known as voiding—which is the main characteristic of another form of cross stitch, Assisi work.

The colours. Cross stitch is usually worked in colours—often very bright—which contrast with the background fabric, and the interplay of the colours you choose is all-important. It is often

Cross stitch is one of the simplest and most ancient of all embroidery stitches. It dates back to the Coptic period and has been a form of peasant art for many centuries, appearing in one form or another throughout the world. Some of the best examples of this work come from the Slavonic countries of Eastern Europe where it has been used to adorn national dress.

Cross stitch can be exciting and absorbing to work and in Victorian times in Britain it was a popular pastime to make cross stitch pictures, often misnamed 'samplers' (true samplers should consist of several different

stitches and were kept as a form of reference). Many of these pictures were made by little girls and consisted of the alphabet, a text, their age and the date, all in minute cross stitch.

How to use cross stitch

Cross stitch can be used for exciting designs on clothes such as smocks, blouses, dresses; for accessories such as bags, belts and slippers; and for the home for rugs, table linen, cushions and curtains. Whether it is worked in an all-over design or simply in a small motif or in a border depends on the size of the item and the background fabric.

This is the kind of simple, colourful motif that is most successful and easy to do in cross stitch. When using a heavy even-weave woollen fabric such as this hopsack for the background the stitches should be worked over a unit of one thread so that the subtlety of the design is not lost.



more effective to use several tones of one colour rather than introducing completely different colours.

Planning your design. Although it is possible to buy transfers of cross stitch patterns to print on to fabric, it is much more satisfying to use an even-weave fabric and make your own design.

To plan your design, draw it first on to graph paper, using different coloured pencils or symbols to represent each colour, with one square representing one stitch or unit. When working from the graph each square or unit may be considered as one or more threads, which remains standard throughout the work.

A unit of three threads usually makes a good average-size cross, each stitch being made by counting three threads along the fabric and then three threads up.

By reducing or increasing the number of threads in the units—or by using fabric with fewer or more threads to the centimetre (inch) a design may be made smaller or larger accordingly.

An essential point in working cross stitch is that the counting of both stitches and threads must be accurate, and if you are using a transfer it is important to ensure that the rows of crosses lie on the weave of the fabric.

The fabric

Even-weave fabrics with threads which are easy to count are obviously the best to use for cross stitch and as well as the traditional embroidery linens you can use hessian, hopsack wool, 'Hardanger' cotton, Binca and many synthetic furnishing fabrics. Check fabrics can also be used even if the weave is uneven as the sizes of the crosses can be determined by the sizes

of the checks. On a gingham fabric with large checks, you might work four small stitches within one square.

The threads

Any thread—cotton, silk, linen and wool—can be used provided it is suitable in weight to the background fabric. A coarse fabric needs a fairly heavy thread while a fine fabric needs a lighter thread. Variety can be introduced by using threads of different textures.

The stitches

Cross stitch is formed by two oblique stitches crossing in the centre. There are two basic methods in which it can be worked, either by making one complete stitch at a time or by making a line of single oblique stitches in one direction, then completing the stitch on the return journey (figs. 1 and 2).

It is important that the upper thread of the stitch should lie in the same direction if an even and regular effect is to be achieved. Traditionally the upper thread should slope from bottom left to top right.

Variations of cross stitch, such as rice and double cross, are similar to those used in needlepoint (see Needlepoint chapter 7, page 878).

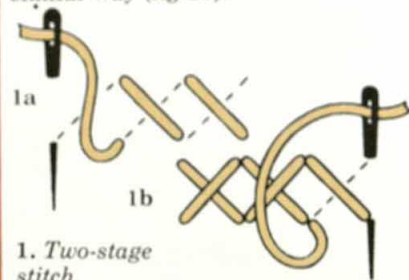
Combining cross stitch. The stitch which is most often combined with regular cross stitch is double running (fig.3). This is a small line stitch which is used to break up a mass of cross stitch pattern and lighten it. It produces a light filigree effect and is always worked in two journeys.

Double running stitch is sometimes known as Holbein stitch, after the early 16th-century artist, who painted many portraits showing the stitch.

Cross stitch

For areas

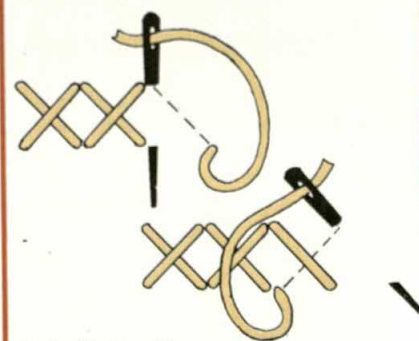
To work cross stitch in two journeys, bring the needle through on the lower right line of the cross and insert at the top left line of the cross. Take a straight stitch along the wrong side of the fabric and bring the needle through on the lower right line of the next stitch. Continue to the end of the row in this way (fig.1a). To complete the stitch, work from left to right in a similar way (fig.1b).



1. Two-stage stitch.

Outlines and single stitches

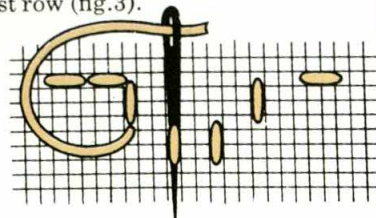
To work cross stitch individually, start as above but complete the cross each time (fig.2) before beginning the next stitch. Pass the thread on the wrong side of the fabric to the lower right line of the position of the next and subsequent stitches.



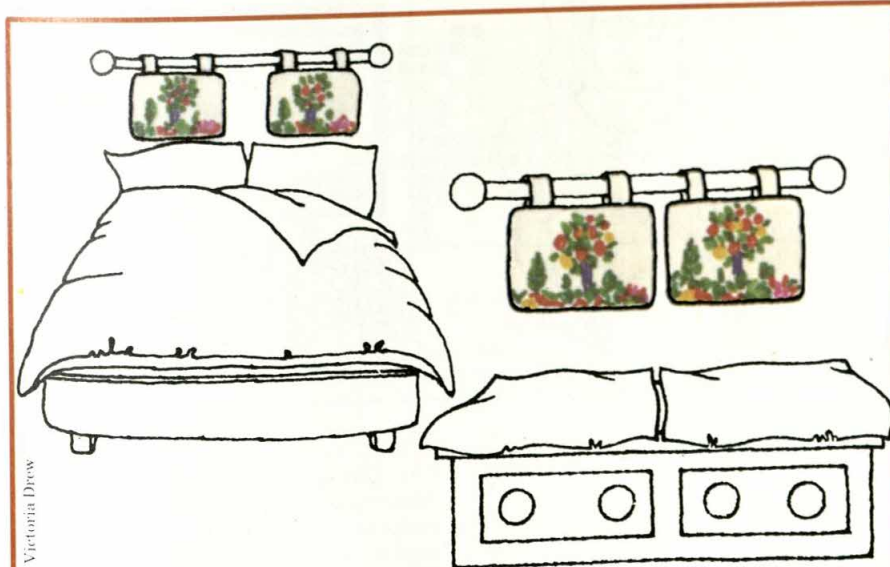
2. Individually worked stitches.

Double running stitch

Working from right to left, work a row of running stitch (see Embroidery chapter 1, page 262), making the stitches and spaces the same length as the crosses. To complete the stitch, work from left to right, filling in the spaces left in the first row (fig.3).



3. Completing double running stitch.

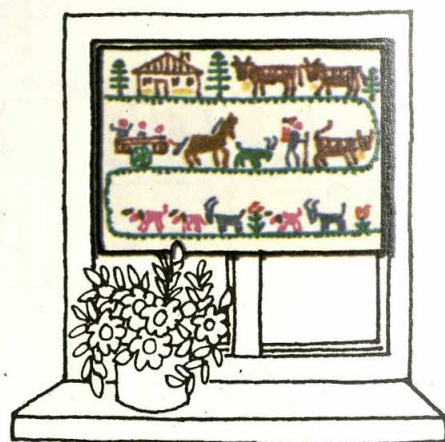
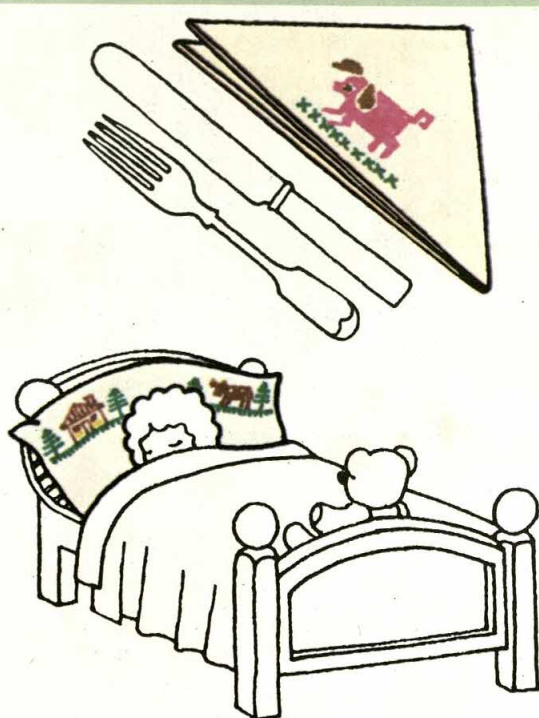


Victoria Drew

Make pairs of hanging cushions with cross stitch motifs to use as back rests for a seating area or as unusual bedheads.



Work this charming cross stitch picture for a nursery or abstract the motifs and use them individually.



The cross stitch motifs from the picture above could be worked individually in the corner of a napkin, as a group on a pillow, on the yoke of a little girl's dress or you could embroider the whole picture on to a roller blind.

Cross stitch motif

The photograph opposite shows a charming example of the kind of pictorial 'sampler' worked by Victorian children. Notice how the spaces between stitches are used to suggest features. If you do not wish to make a complete item from even-weave fabric you could work the embroidery only on it, cut round leaving a margin of about 1.5cm (1") and apply it as a patch on to the finished item.

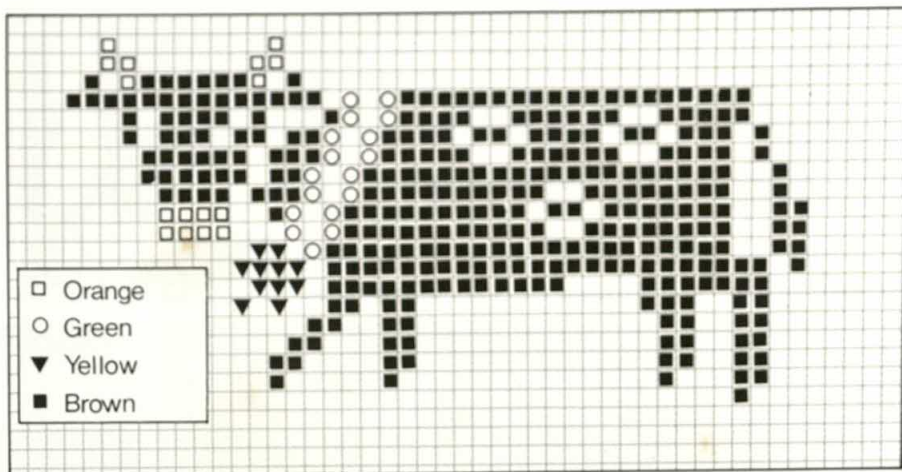
The motifs shown worked individually were done in stranded cotton on linen fabric. Alternatively you could work in wool to brighten up a favourite cardigan or sweater.

You will need:

Remnants of stranded cotton or knitting wool in various colours. Try to match the weight of the yarn to the background, using three strands of cotton or a 4-ply wool on a lightweight background or six strands of cotton or a double-knitting wool on a heavier background.

□ Working over two or three threads of the fabric, work the stitches in the appropriate shades as shown in the charts. Darn all ends neatly through the backs of the stitches on the wrong side. The size of the motif will of course vary according to the weave of the background. On a fabric with 19 threads per 2.5cm (1"), for example, the cow motif would be about 11cm (4½") x 5cm (2") when each stitch is worked over two threads.

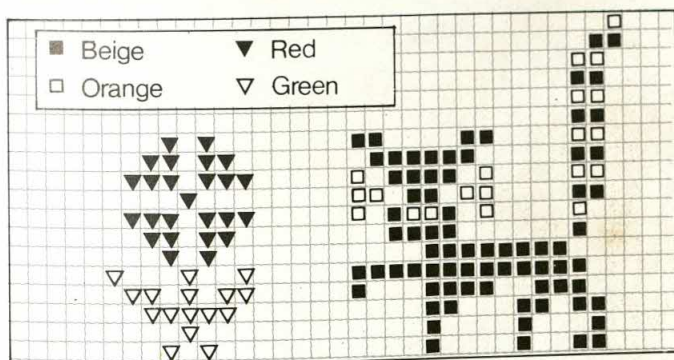
On a knitted background work over a unit of one or two knitted stitches counted vertically and horizontally.



Working chart for the cow. Each square represents one cross stitch.



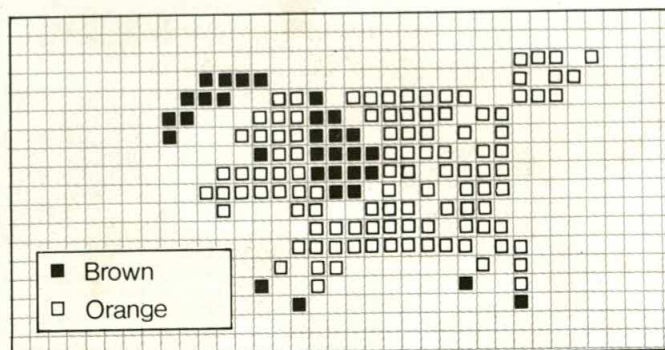
The cow worked on linen with 19 threads per 2.5cm (1"); each stitch is over two threads.



Working chart for the flower and cat.



The cat worked on linen as above.



Working chart for the pig.



The pig worked on linen as above.

Decorating glazed china

Colour —
paint 10



Decorative china is pleasing to look at and can improve the appearance of almost any room, but it is usually expensive and many older pieces are sought after by collectors and are therefore difficult to find as well.

Using ordinary, white glazed pottery, however, you can make your own decorative china in the colours and styles you wish. You can even match patterns to fabrics or wallpaper.



Paints for china

Special paints are on the market for decorating glazed ceramics. These are chip-resistant, comparatively hard-wearing and are suitable for china that does not need regular washing.

China paint is also available which can be mixed with glaze and baked in an oven for half an hour or so. This increases the adhesion and makes the colour more hard-wearing but it is not

recommended for table china. When baking china in a household oven always follow the glaze manufacturer's instructions regarding temperature. These usually call for a medium-hot oven.

Paints that require 'cooking' often change colour a bit afterwards so always try a test sample first, perhaps on the bottom of the piece you intend to paint. A dab of each shade will give

you an idea of what to expect from the finished piece. These paints, like many others, can be intermixed to make different shades.

China that is in constant use should be painted with a special on-glaze enamel, applied over the existing glaze. This must be fired in a professional kiln since temperatures of between 750 - 850 C (1400 -1500 F) are required to fix it. Some potteries provide this service for customers. For small pieces a home enamel kiln can be used.

China paints for home use can be bought from hobby and craft shops and many art suppliers, while special potter's glaze is available from pottery suppliers.

Before you begin make sure china is free from grease. Use white spirit to remove any stubborn spots and keep white spirit and rags on hand for removing any paint that runs or drips while you are painting. You will also need considerable white spirit for thinning many kinds of glass paint.

China for painting

Despite the limitations of painting on glazed china without professional firing, there is a rich variety of undecorated yet ornamental pieces which can be successfully painted.

Vases, china boxes and ceramic plant pots can be made more distinctive and colourful by applying geometric or representational motifs. Designs can be applied all over or as borders and single motifs.

Animal figures offer tremendous scope for imaginative decoration. A few strokes of the paintbrush turns an inexpensive white, china pony into a zebra. White cows become purebred Fresians when dabbed with spots of black paint or they can be treated more fancifully and covered with little hand-painted flowers.

Figurines can be painted in full colour and china eggs, salt and pepper shakers and toast racks brightened considerably with colourful designs.



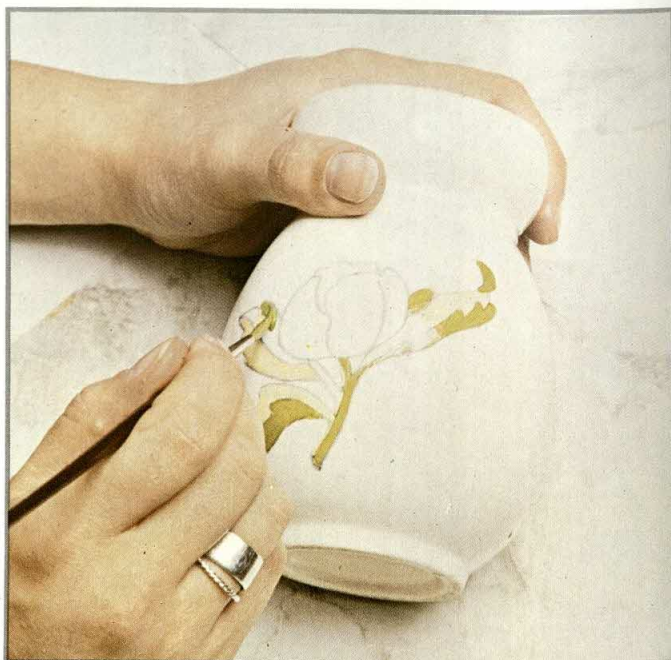
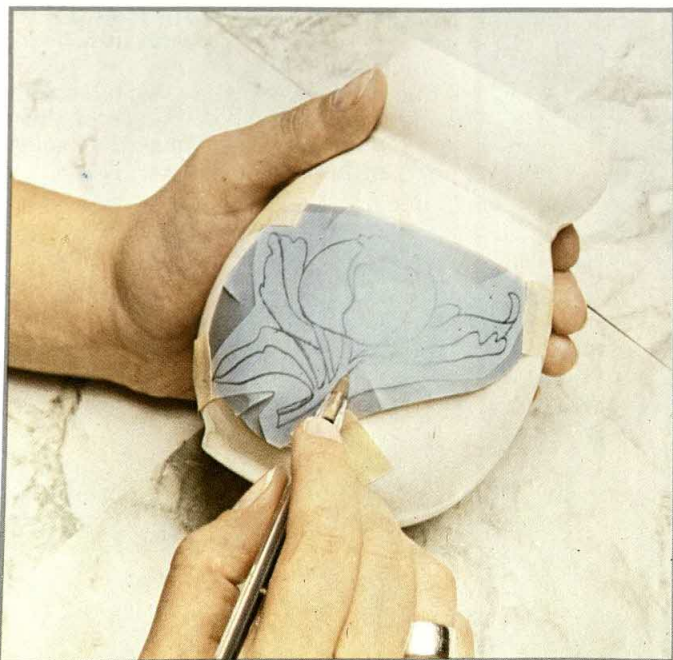
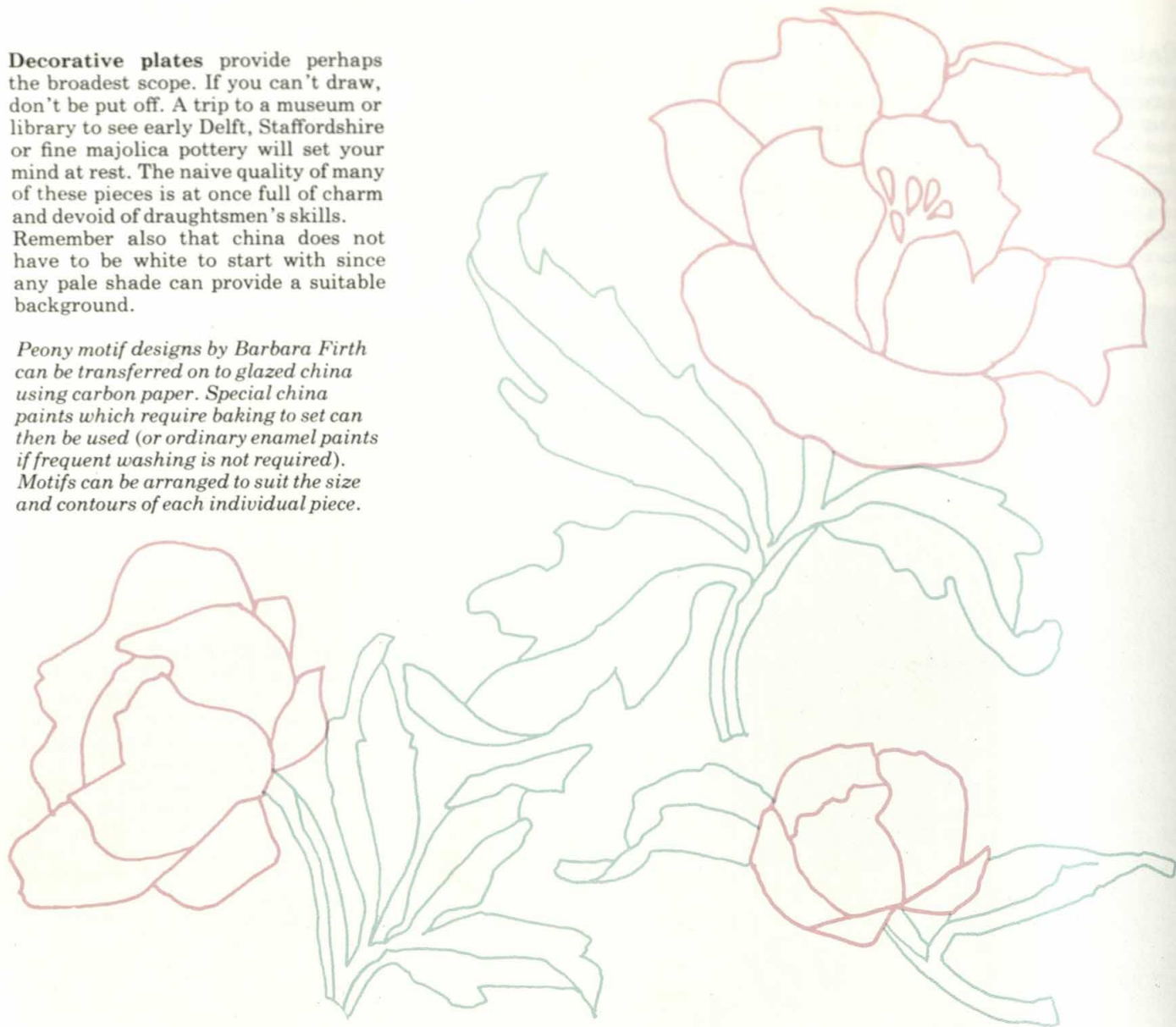
Washstand pieces before decoration.

Painted pink peonies changed miscellaneous pieces of old china into this ornamental 'Victorian' washstand set.

Melvin Grey

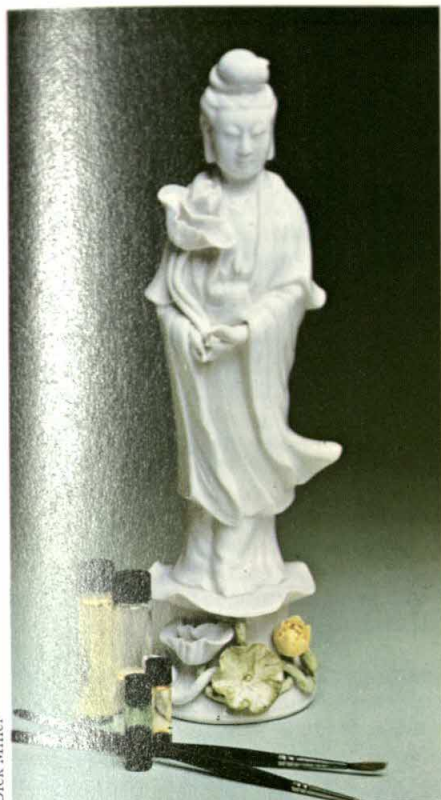
Decorative plates provide perhaps the broadest scope. If you can't draw, don't be put off. A trip to a museum or library to see early Delft, Staffordshire or fine majolica pottery will set your mind at rest. The naive quality of many of these pieces is at once full of charm and devoid of draughtsmen's skills. Remember also that china does not have to be white to start with since any pale shade can provide a suitable background.

Peony motif designs by Barbara Firth can be transferred on to glazed china using carbon paper. Special china paints which require baking to set can then be used (or ordinary enamel paints if frequent washing is not required). Motifs can be arranged to suit the size and contours of each individual piece.

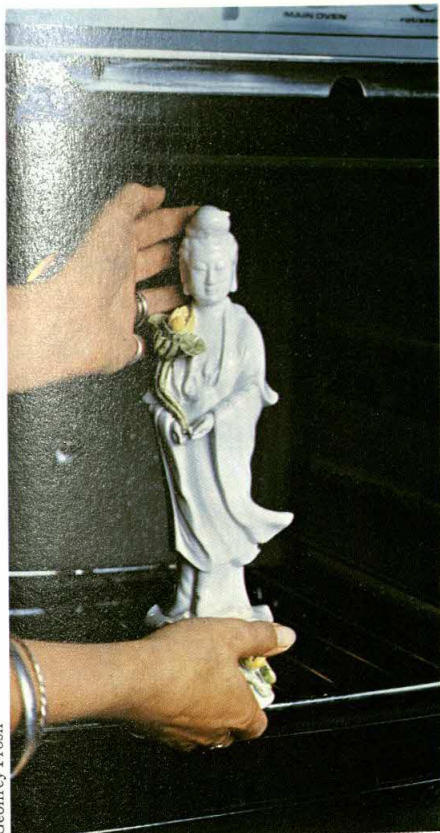


Designs are transferred to china by tracing over carbon paper.

Areas of the design are filled in with appropriate colour.

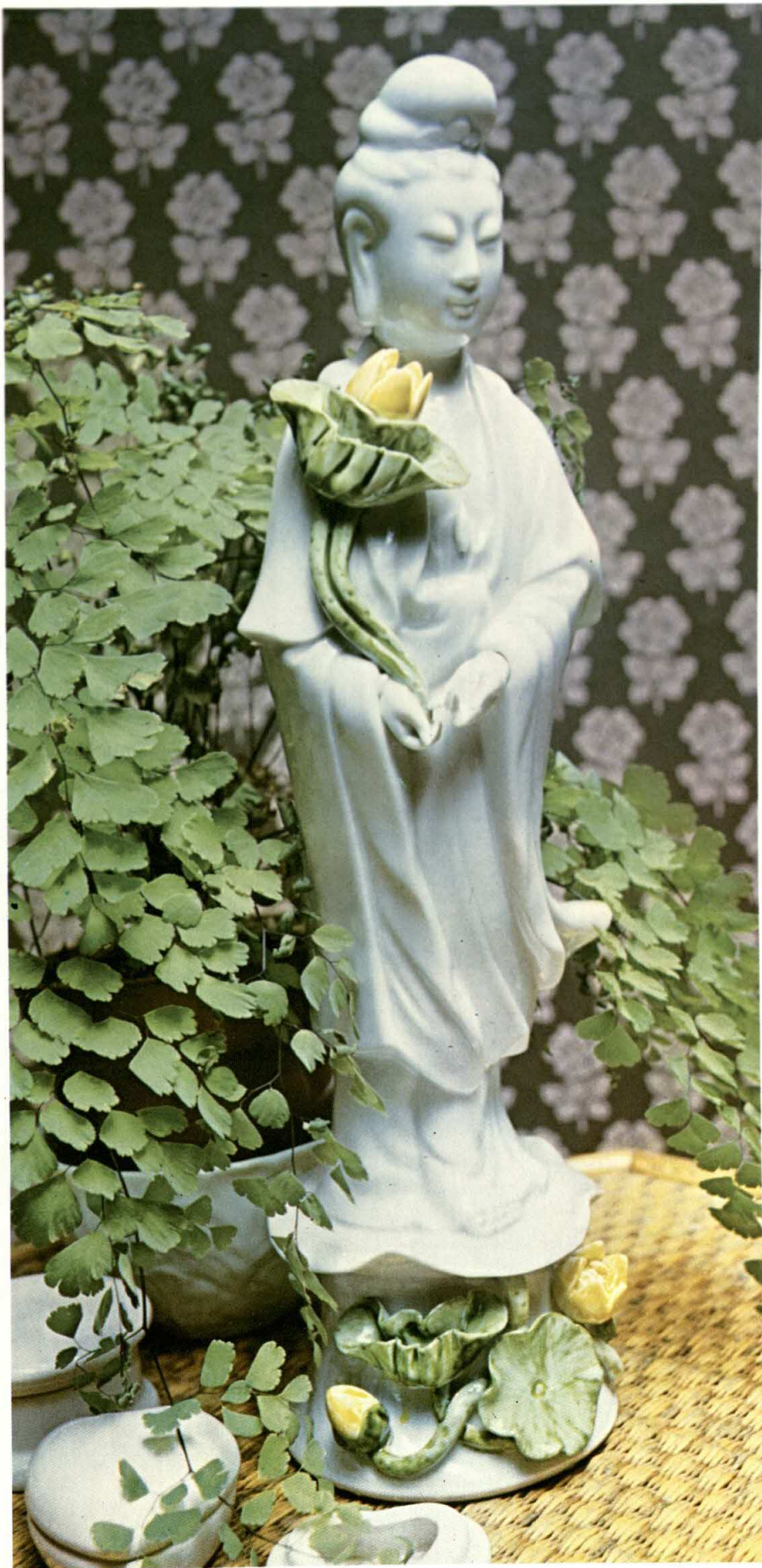


Contours such as flowers which are in relief lend themselves to decoration.



Paint is oven-baked to harden it.

Traditional Chinese figurine is made distinctive by touches of paint.



Planning your work area

Wood — carpentry 16



A well designed working area makes it easy to keep things tidy and for clearing up afterwards. When planning a work room two of the most important factors are the source of light and power. If you are right-handed keep the light to your left or in front and above you. Tool storage must be so arranged that you can reach things easily without the possibility of knocking things over in the course of your work.



The problem with creating a working surface is not only the expense but finding the necessary space. A working surface or a work bench does not have to be large nor expensive to be effective. The essential thing is that the working area must be suited to the purpose for which it is intended. A work bench must be steady and also large enough to allow you to work on it with ease. For example, if you are sawing you will need some elbow space and room to move the saw in its cutting position. This does not necessarily mean that the surface must be large. If it is kept uncluttered by tools and materials, quite a lot can be done on a very small area.

Tool storage. Keep tools near at hand. If each tool has its place on a shelf and it is within easy reach, it is easier to clean and tidy the working area. There are various ways to store tools to make the most of available space (Carpentry chapter 12, page 864).

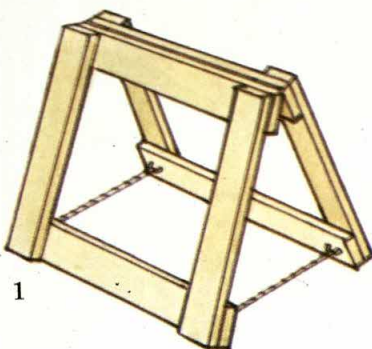
Make-do surfaces. Most flats, apartments or houses contain something with a good surface that is steady enough for doing odd jobs, but the problem is that this surface is not always suitable for holding clamps or vices and is liable to be damaged by them. However, it is easy to protect a surface from being damaged by clamps and vices if you use a piece of hardwood—any odd bit—between the clamp and the surface. Another alternative is to use a vice with built-in suction pads rather than a metal clamping device.

The working surface should be free of nails or screws on the upper surface so that when you are using cutting tools there is no chance of damaging their cutting edges or blades on screws or nails. While natural wood is usually used in preference to man-made boards for working surfaces a similar thickness of blockboard can be used or, if available, multi-ply is also suitable. The advantage of using man-made boards is that they will not warp.

Work benches to buy

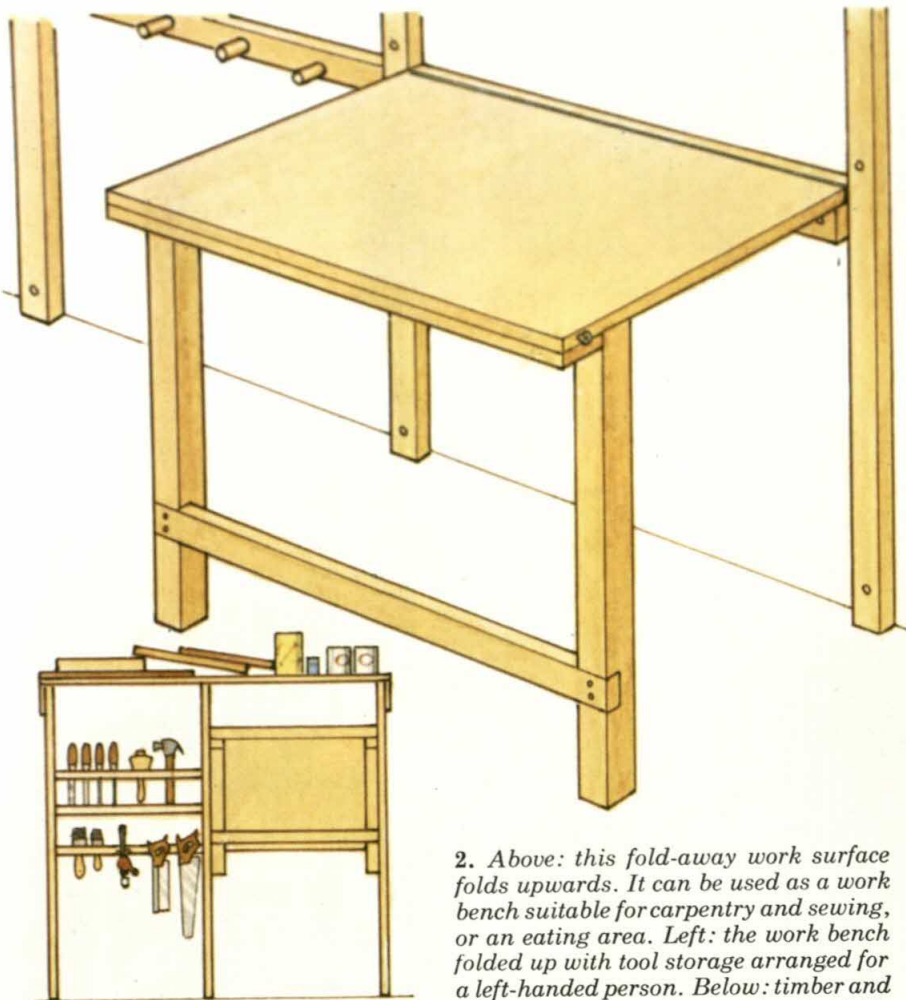
Work benches can be bought in different sizes and shapes, depending very much on how much you want to spend. The cheapest commercially-available bench is a saw horse (fig.1). If you have two of these they can be used to support a top to make a table or a work top on which to stand when painting and decorating. If you can find an old door, cover it with plywood to give you a flat surface. It makes a good work top when placed on the saw horses.

1. Two saw horses combined with a strong flat surface makes a good work bench. It can double as a kitchen table or it can be used to stand on when painting and decorating.

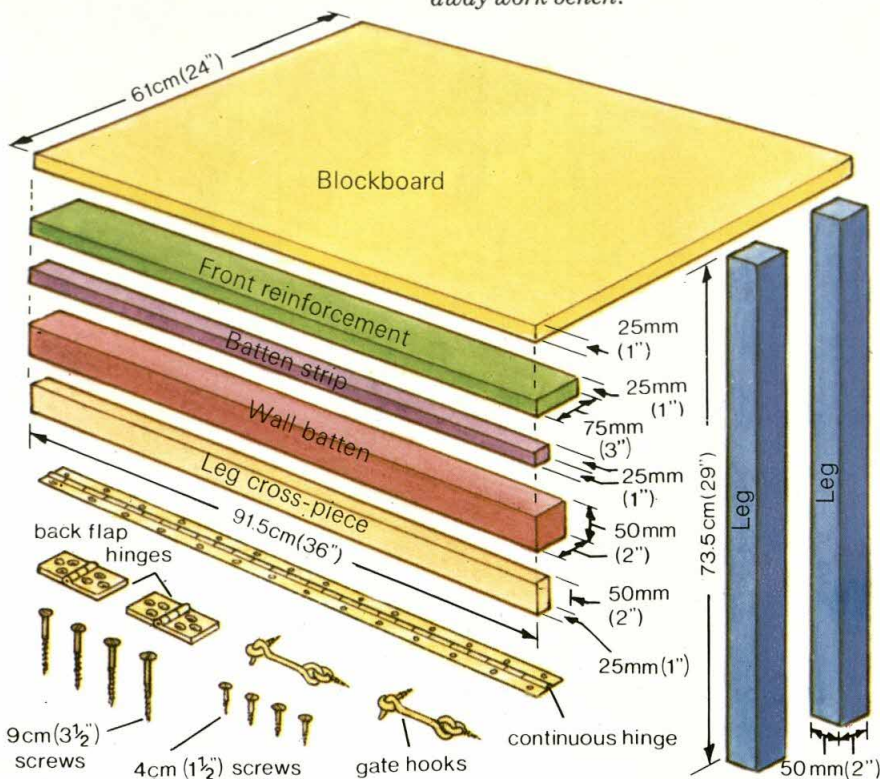


The Workmate is a versatile, commercially-available work bench. It has two working levels and a built-in vice and it can be folded almost flat.

Wood or metal benches in various sizes are also available commercially. Whatever your choice for a work bench make sure that it is suitable for your work. It is pointless buying the most expensive one if you are not going to make full use of it, besides you may find more satisfaction in making your own work surface for your craft.



2. Above: this fold-away work surface folds upwards. It can be used as a work bench suitable for carpentry and sewing, or an eating area. Left: the work bench folded up with tool storage arranged for a left-handed person. Below: timber and hardware required to make the fold-away work bench.



Fold-away surfaces

A working surface which folds away is very useful and space-saving but it must be constructed properly otherwise it will not be steady. This type of work-bench can be installed anywhere where it is possible to attach battens to the wall and where marks made on the wall behind during work will not matter unduly.

The fold-away work surface (fig.2) can be part of a wall storage unit. To make a fold-away work surface first decide on how high you want it to be—the height must be relative to your own height so that you can work comfortably without having to stoop—76cm (30") is about average. The area of the working surface must be large enough for your particular work without taking up too much space within the surrounding area.

The measurements for the fold-away work surface in the following instructions will make a working area 91.5cm x 61cm (3'x2'), 76cm (30") high. You can vary the size to suit yourself.

You will need:

Timber

Blockboard 91.5cm x 61cm (3'x2'), 25mm (1") thick.

The lengths given for the softwood are exact. Buy the timber slightly longer and trim it to size as you work. This allows for squaring the ends and trimming the legs, if necessary, to level the working surface.

Softwood 50mm x 50mm (2"x2"), 91.5cm (36") long—for the batten against the wall.

2 pieces of softwood 50mm x 50mm (2"x2"), 73.5cm (29") long—for the legs. Softwood 25mm x 25mm (1"x1"), 91.5cm (36") long—strip above batten to hold work surface.

Softwood 25mm x 75mm (1"x3"), 91.5cm (36") long—to reinforce the front edge of the work surface.

Softwood 25mm x 50mm (1"x2"), 91.5cm (36") long—for the strip between the legs.

Hardware

2 hinges with screws—to attach the legs to the blockboard—a 4.5cm (1 1/4") back flap hinge with uncranked knuckle or table leaf hinges, are suitable.

Continuous hinge or Hurlinge, with screws to attach the blockboard to batten.

To set hinges see Carpentry chapter 4, page 238.

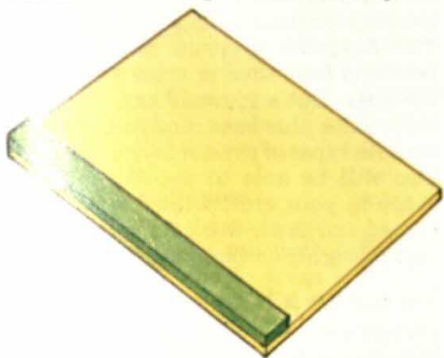
4 screws 9cm (3 1/2") long—to attach the batten to the wall.

4 screws 4cm (1 1/2") long—to attach cross-piece to legs.

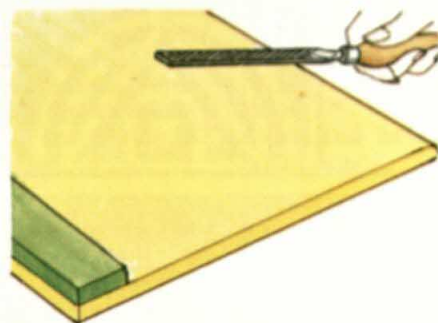
2 gate hooks or cabin hooks—these are attached to wall plugs and hook into the work surface when folded away to secure it.

Wood glue.

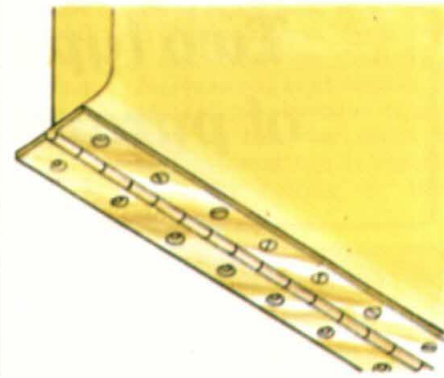
□ Glue the reinforcement strip of wood to the front underside of the blockboard. Clamp and leave to dry.



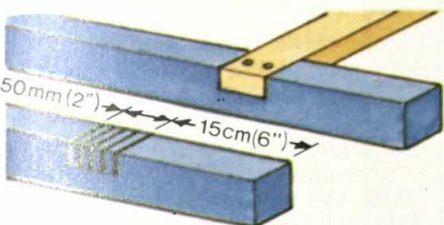
□ Using a file round the opposite edge on the underside of the blockboard. This gives the necessary clearance to fold the surface away.



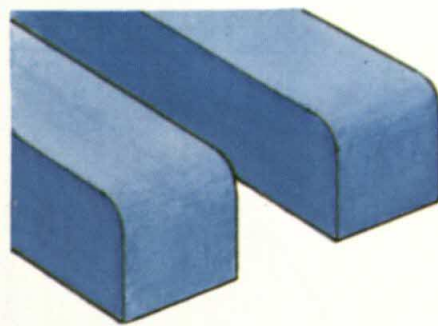
□ Attach the strip hinge or Hurlinge to the blockboard.



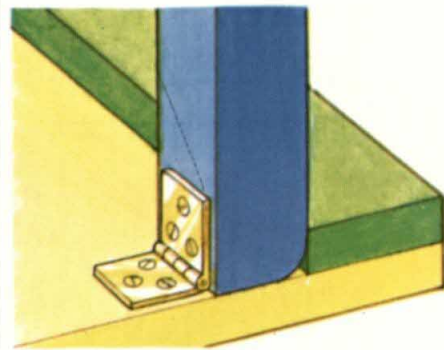
□ Attach the leg cross-piece to the legs so that it is 15cm (6") from the leg ends. Set the cross-piece into the front of the legs by making saw cuts to the required depth and then remove the waste with a chisel.



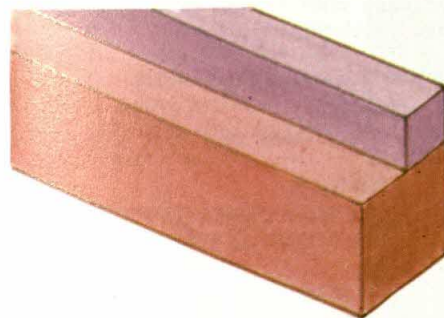
□ Round top front edge of legs to allow for hinge clearance when folding up.



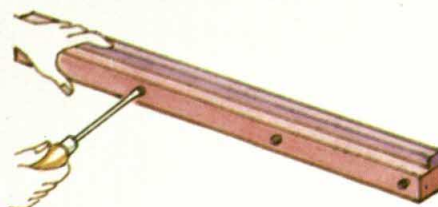
□ Attach the legs to the underside of the blockboard with hinges.



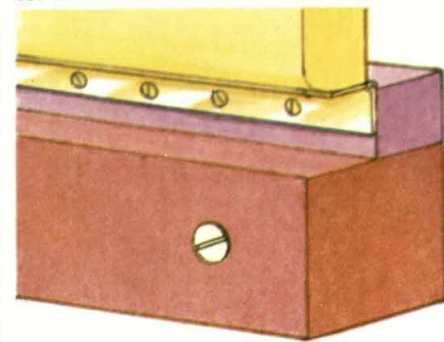
□ Glue the batten strip to the wall batten as shown.



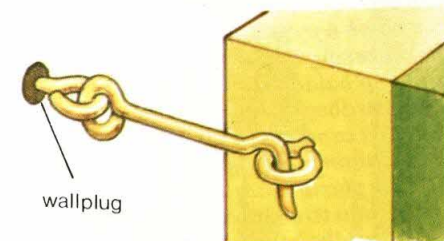
□ Attach the batten to the wall with 9cm (3½") screws (see Carpentry chapter 6, page 354). Make sure that its position is such that when the working surface rests on it, the working surface will be level (use a spirit level if necessary).



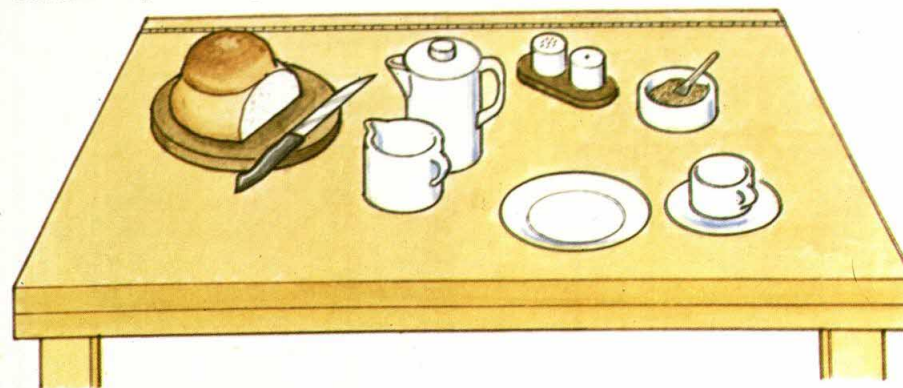
□ Screw the hinge on the blockboard to the batten against the wall to assemble the work bench.



□ Attach one eyelet to each side edge of the work surface. Fold the surface upwards and make marks on the wall corresponding to the eyelets. Insert wall plugs at the marks and attach gate hooks or cabin hooks to complete.



You can adapt the design to build a breakfast bar.

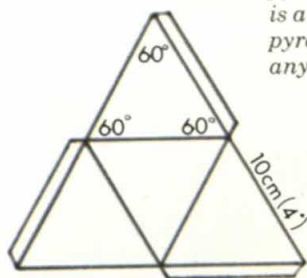


Two types of pyramid

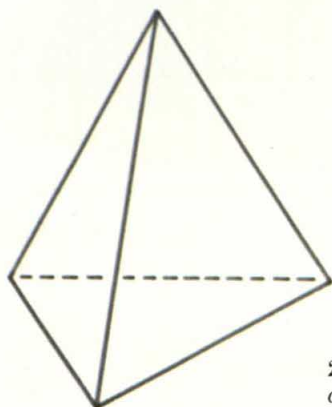
Design know-how 43



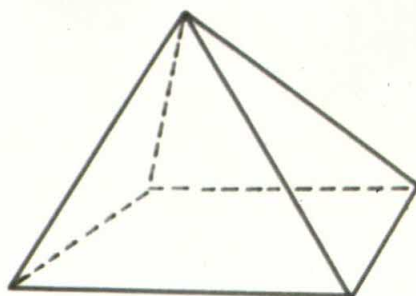
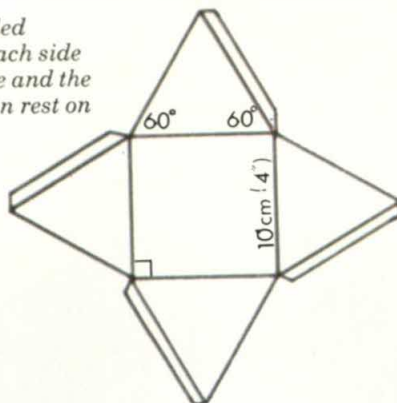
1. Four-sided pyramid: each side is a triangle and the pyramid can rest on any face.



1



2



2. Five-sided pyramid has a square base and triangles on each side.

Pyramids are usually associated with the ancient Egyptians who built these monumental stone structures as burial grounds for their kings.

The Egyptian pyramid has a square base and four sloping sides meeting at the apex. But a pyramid can also have three sides plus base, and in this chapter both types of pyramid are explained. You will be able to use the pyramid shape in your craft work for all kinds of card and paper work and for candles, paper weights—even tents.

To make a four-sided pyramid

This has a base and three sides—see fig.1.

You will need:

Thin card 25cm x 25cm (10"x10").
Paper glue such as Gloy Studio Gum.
Trimming knife such as a Stanley knife.
Protractor, ruler, pencil, scissors.

□ Draw an equilateral triangle with 10cm (4") sides in the middle of the paper. Each angle of the triangle will be 60°.

□ Draw three other equilateral triangles around the first triangle, the same size as the first.

□ Draw in 6mm (¼") glue flaps around the triangles as shown in fig.1.

□ Cut around outer edge.

□ With the trimming knife score all the pencil lines including the glue flaps.

□ Bend the three outside triangles in towards each other. These make up the sides of the pyramid.

□ Glue the sides to each other. You may find it easier to glue over the top of each side rather than attempt to stick each flap underneath.

To make a five-sided pyramid

This has a base and four sides—see fig.2.

You will need:

Thin card 30cm x 30cm (12"x12").
Other materials as for the four-sided pyramid.

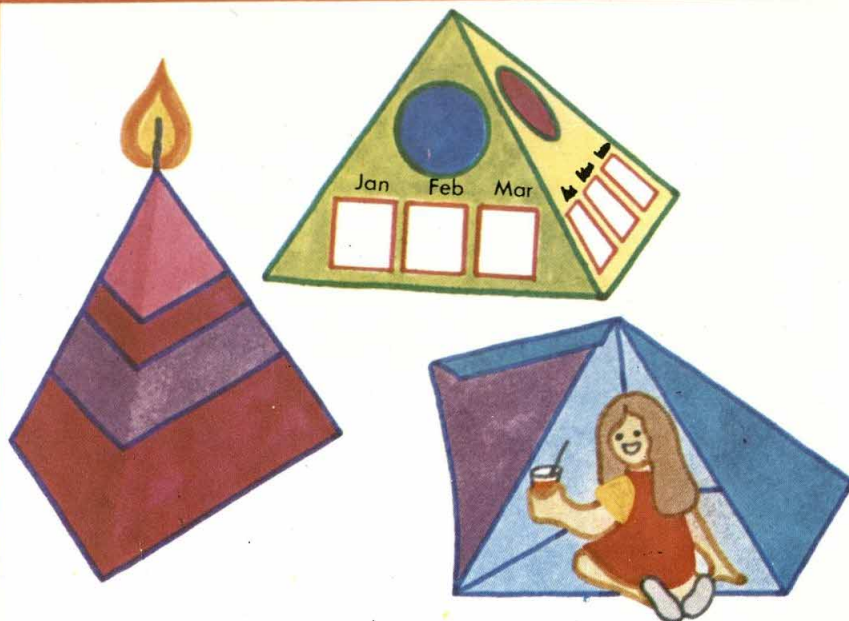
□ Draw a square with 10cm (4") sides in the middle of the card.

□ Draw four equilateral triangles with 10cm (4") sides. Each angle of the triangles will be 60°.

□ Draw in glue flaps.

□ Then, following the instructions for the four-sided pyramid, cut out and glue the pyramid together.

The objects (left) show what can be done with a pyramid shape, remembering that a pyramid is very firm and balanced. It can be used to make cardboard moulds for multi-coloured candles. Or stick pages from a calendar on to a thin card pyramid then fill with plasticine to make a paperweight. For a cloth tent make channels along all seams to take bamboo supports.



Creative ideas 43

Crochet rag slippers

If you've ever been faced with the unhappy prospect of turning a favourite dress into a paint rag here is a pleasant alternative—crochet a pair of comfortable slippers!

Jumble sales are also a cheap and reliable source of rag fabric. Choose silky fabrics for a touch of 'glamour' or use yesterday's wool skirts for snug warmth.

You will need an assortment of rags and a No.7.00 ISR (US size K) crochet hook. Measurements are determined as you work and by the size required.

The tension depends entirely on what type of fabric you use for rags, so it is impossible to say accurately. Take as an approximate guide 10dc and 10 rows to 10cm (4").

Making the slippers

Cut rags into strips 2-2.5cm ($\frac{3}{4}$ "-1") wide. Join into a long rope with reef knots (to keep the joins flat). Using No.7.00 hook make 5ch and join into a ring with a ss.

Work 10dc into ring, but do not join with a ss.

Easy to make, inexpensive and durable, these slippers are ideal for children.

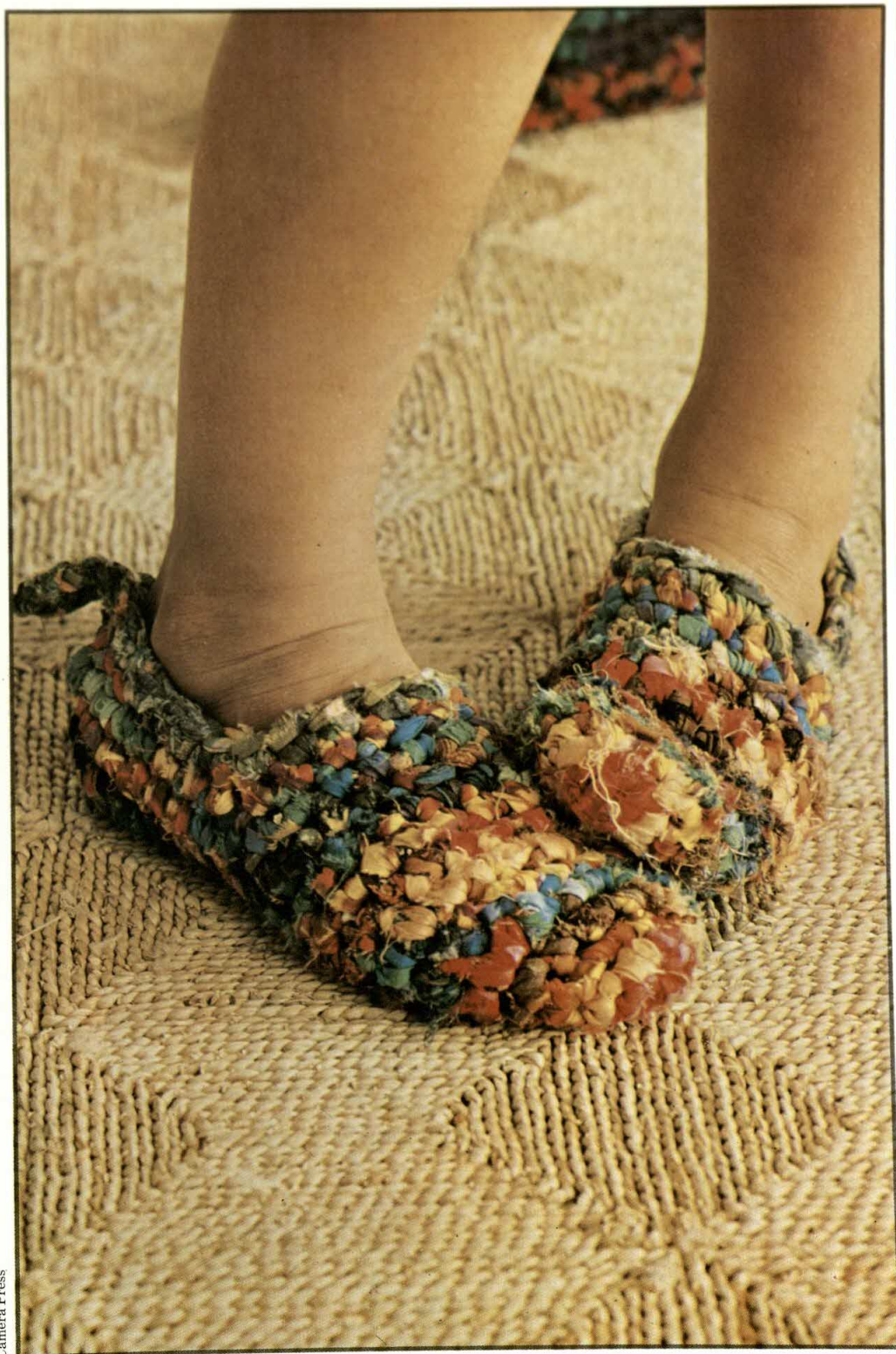
Work (2dc into next dc, 1dc into next dc) until work is the right size to go round the toe end of your foot (approximately 20 sts for women's size, more or less according to required size). Continue in rounds of dc (still working spirally without joining rounds) until work reaches to top of

instep, about 13cm (5") for women's size.

Divide for sole. Continue in dc on only half the sts and work in rows until sole reaches nearly to heel, then decrease one st at each end of the next 2 or 3 rows. Break off.

Sides and heel. With RS facing, rejoin rag at side of

instep and work in dc along side of sole, round heel and along other side, ss to first st at instep, turn. Work 3 or 4 more rows on these sts, decrease one st at each side of heel on alternate rows, then on last row make a loop of about 6ch at centre back for pulling on the slippers.



Victoria Drew

Camera Press

Sculpting on an armature

Clay 27



A human head shape in simplified form can be built in coiled clay and Clay chapter 23, page 986, gives you a good idea of what is involved. However, a coiled shape is hollow and unsupported, which can present difficulties if you are concentrating on elaborate modelling rather than on keeping the coiled structure in position.

If you want to make a more ambitious, detailed portrait head the method used here is more suitable. It involves constructing a rigid skeleton—or armature—upon which the clay can be built. This structure prevents the clay from sagging out of shape as you work, and it is an aid widely used by sculptors in a variety of media.

Using an armature

An armature can be made of almost any material that is sufficiently rigid.

Wood, aluminium wire or metal piping are all equally suitable, but any iron and steel used in the construction (for example, nails or screws) should be painted to prevent it from rusting and staining the clay.

It is important to realize that in most cases the armature cannot be left inside the sculpture—the clay would shrink on to it in drying and then crack.

There are three basic ways of overcoming this difficulty. The first is to extract the armature before the clay has dried out, and this is the method dealt with in this and the next chap-

ter. Alternatively, it is possible to leave the armature in place if the sculpture is made in self-hardening clay that does not shrink to such an extent and need not be fired, or to make a plaster mould of the clay model and then take a casting from the mould. The latter method is quite complicated, and not recommended for a beginner.

Bust with removable armature

This method is particularly suitable for medium-size works such as the near life-sized portrait bust of a young girl illustrated here.

If the idea of attempting a full-scale portrait bust seems intimidating, remember that a fresh and lively approach can counteract deficiencies in conventional technique. There is no reason, if you observe your subject carefully, why you should not be able to achieve a vigorous likeness.

Planning. A good way to start is by making a small clay model about 7.5cm (3") high (fig.1). The purpose of this is merely to help you decide two things—first to plan how much of the figure you want to portray (you may want to stop below the chin, or to include the neck



1. Begin by making a small clay model as a working guide.

and shoulders); and to work out how you want to poise the head. It is simplest to keep the head looking straight forward, but if you tilt it up or down or to one side the position can add a great deal to the suggestion of mood and personality.

Once you have made up your mind on these points, there is no need to spend any more time working on the small model.

Portrait head by Hugh Powell.

Constructing a rigid armature

For a nearly life-size portrait such as the one illustrated here, you will need:

For the baseboard

2 lengths of softwood 150mm x 25mm (6"x1"), 30cm (12") long, planed both sides.

2 lengths of softwood 50mm x 25mm (2"x1"), 30cm (12") long, planed both sides.

8 screws 38mm (1½").

Bradawl.

Screwdriver.

For the upright structure

One length of softwood 38mm x 38mm (1½"x1½"), 23cm (9") long, planed both sides.

4 small L-shaped shelf brackets, about 10cm x 7.5cm (4"x3").

16 screws 38mm (1½").

Newspaper.

String.

Paint.

Small plastic bag, about 30cm (12") square.

To make the baseboard

□ Place two lengths of 150mm x 25mm (6"x1") timber together, side by side, and join them by laying the two 50mm x 25mm (2"x1") strips across them and securing them with screws from the underside (fig.2).



2. Join the wood for the baseboard.

To form the central post

□ Place the 23cm (9") length upright on the centre of the baseboard and fix it in position with the shelf brackets.

□ Paint the brackets to prevent rusting.

□ Damp a wad of newspaper and wrap it round the central post, building up a thick layer at the top where the head will be.

□ Cover all this with a small plastic bag and secure it with string, not too tightly (fig.3).

This construction means that you can easily pick up and move your work without touching the clay.

3. Tie a plastic bag over the basic head shape of damp newspaper.



Adjustable armature

An alternative armature, that is adjustable to the tilt of the head, can be constructed using loops of metal wire.

You will need:

The same baseboard structure as for the rigid armature.

4 shelf brackets about 10cm x 7.5cm (4"x3"). 16 screws 38mm (1½").

One length of softwood for the central post 50mm x 50mm (2"x2"), 15cm (6") long, planed on both sides.

Offcut of 50mm x 25mm (2"x1"), 15cm (6") long softwood.

2 lengths 6mm x 6mm (¼"x¼") square sectioned aluminium wire, each 90cm (3') long.

Copper wire 1.8mm (14 gauge) for binding the structure together.

Sculptor's chisel 6mm (¼").

Bradawl, screwdriver.

Drill (optional).

□ Fix the central post to the base-

board with shelf brackets.

□ With the chisel, cut a 6mm x 6mm (¼"x¼") groove 7.5cm (3") long at the top of each side of the central post.

□ Bend the aluminium wire into loops and tap the ends into the grooves on alternate faces (see fig.4).

The length of these loops must be determined by the height of the head you intend to create. When judging the length, remember that you are going to build upon this skeletal structure with newspaper and with clay.

□ Wind a sufficient length of wire around the post to keep this structure in place.

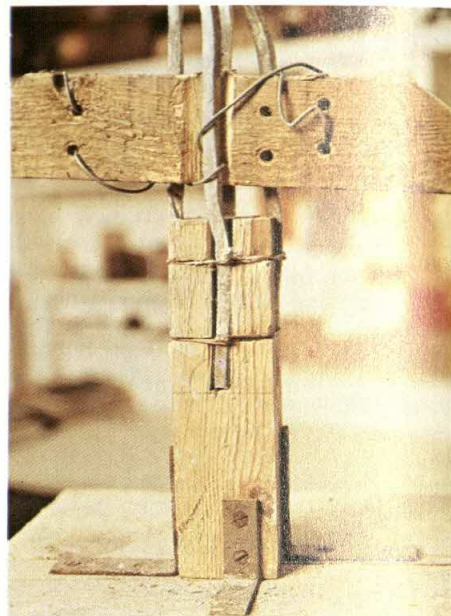
□ Bind the point where the loops intersect with wire.

□ Cut a groove about 6mm x 6mm (¼"x¼") in the centre of each side of the small offcut of 50mm x 25mm (2"x1")

4. *Insert the crosspiece of wood and bind it firmly in place with wire.*

wood. Insert it between the aluminium loops and bind it in place with wire (fig.4).

□ Drill holes in the crossbar if this makes the binding firmer.



5. *The finished structure need not be elegant but must be firm and strong.*

A close-up view shows that the construction need not be elaborately finished, but should be secure (fig.5).

□ Finally, bend the whole structure to suit the angle of the head, neck and shoulders and cover with newspapers and plastic bag as previously described.

Modelling the head

You will need:

Prepared red earthenware clay, with about 25% by volume of grog added.

Modelling tools. Your thumb is the best modelling tool you have, and it can be used to build up shapes methodically from pellets of clay which are blended carefully into the mass.

A broad boxwood blade about 25cm (10") long is useful for simplifying an area like the cheek or temples or defining the jaw-line.

A wire-ended modelling tool will cut back or level a little where you feel that a shape has become too bulky.

A twisted wire-ended tool is useful to begin with: you can define broad planes with a hatched surface.

A very small boxwood modelling tool can be used for details such as eyes and the corner of the mouth in advanced stages.

It is helpful, although in no way essential, to work on a banding wheel. Keep a damp sponge close at hand as you work (fig.6).

□ Roll the clay out in slabs about 1.5cm (½") thick—the slabs should handle easily and not be too big to pick up.



□ Begin to wrap the clay round the newspaper, building up a rough skull shape (fig.7). Press the layers of clay firmly down on to each other to force out any bubbles of air. Work slowly and carefully, making sure that the armature remains centrally within the clay shape.

If you want to leave your work for more than a few minutes, keep it damp by covering it with a damp linen rag under some plastic sheeting.

□ The next step is to establish the sideview—or profile—of your subject as accurately as you can.

Beginners tend to make the face and features too large in relation to the whole head, so begin by concentrating on a mass representing the back of the head and cranium, and balance it with the simplest indication of the outline of the face and neck. As soon as you think this looks approximately right, turn the clay shape to face you, carefully and lightly incise a centre line and build up the general mass of the head on either side of it.

□ Indicate by horizontal lines across the centre line the springing of the hair, the brows and the parting of the lips. When you are satisfied with this, look directly at the back of the head, balancing the shape on either side of the centre line (fig.8).

□ From now on keep rotating the clay shape front-side-back-other side, spending about ten minutes working on each view until the lump of clay begins to resemble a head. Never work on one view for too long, and check from time to time to see how your work looks from directly above and beneath. Another good point to remember is to stand back from your work as it progresses and view it from several steps away. Your efforts at this stage should be directed exclusively towards two main objects.

The first is to establish the feeling of the skull form within the head. This is because the skull is the fundamental architecture on which the main features of facial expression (eyes and mouth) and the individualistic detail (nose, hair and ears) are set.

The second objective is to establish accurate proportions between the parts.

□ Ask yourself whether the nose is too long or too short compared with the height of the forehead; whether the eyes are far enough apart compared with the width of the forehead at the temples; if the ear is correctly positioned.

□ Keep comparing overall sizes and distances.

□ Do not allow yourself to attempt the attractive detailing of curving lips, nostrils, eyelids or curls at this stage.

□ Try to make shapes that are clear, bold and simplified to the point of



6. An assortment of modelling tools. Always keep a damp sponge to hand.



7. Wrap the clay around the wadding to build up a very basic head shape.



8. Incise lines, dividing the head into sections, and check the proportions.

exaggeration so that they convey the bare essentials of mass and outline.

□ Concentrate on representing the head in flat or nearly flat planes angled against each other like the facets of a cut gemstone.

In this way the head should gradually take shape all over, no single feature being allowed to develop too far in advance of another.

As a rough guide, the temples and forehead should be a squared block form; the nose a simple flat-sided protrusion correctly angled to the forehead and the right length; eye sockets should be clearly marked, with only a faint suggestion of the eye. The mouth should be a shape to describe the out-

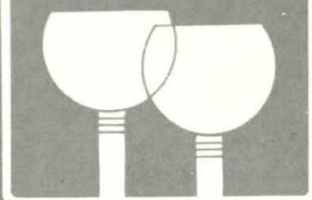
ward curve of the teeth across the face, with lips lightly sketched on this. The jaw-line and chin should be very sharply drawn, with the ears block-shaped in outline to show the degree of projection, size and placing on the head.

It cannot be overemphasized that time and patience used at this stage in repeated checking of relative proportions is the key to successful work.

Sooner than you might think, without any detail, a kind of likeness appears. Then individual detail can be developed on a sound basis. The next chapter considers the individual features in detail, and explains how to remove the head from the armature.

Mending leaded glass windows

Glass 11



There are many older houses which have leaded windows, either plain diamond-shaped panes or a stained glass fanlight above the front door or a coloured window halfway up the stairs.

Sometimes these windows become cracked or broken and even get thrown away in favour of a sheet of clear glass. This is a pity since they are not only beautiful but, with a little skill and practice, can be repaired or replaced with similar glass.

In this chapter instructions are given for the replacement of window glass and also for the repair of cracked or broken glass with leading or with an adhesive.

To replace the glass

You will need:

Tools: see Glass chapter 7, page 798.

Materials

Glass, either stained or clear depending on the type of window to be repaired.

Tinman's solder, 1.5mm ($\frac{1}{16}$ ") thick.

Flux or a tallow candle.

Linseed oil-based putty.

Wire wool or wire brush.

Lampblack or grate black such as Zebrite.

Felt, thick cloth or newspaper for padding the glass while cutting.

White paper larger than the cracked or broken section of the glass.

Pencil, ruler, felt-tipped pen, scissors.

Remove the light (the complete lead-framed assembly of glass) from its frame. To do this proceed in exactly the same way as for the removal of a normal pane of glass. The light will probably be secured with tacks and putty into a rebate (or recess) in the window frame. Rake out the old putty with an oyster knife or other strong knife, draw out the tacks with pliers and carefully ease out the light. You may find it necessary to hold a strip of wood along the inside edge of the lead and tap this lightly with a hammer in order to free the lead from the window frame.

Removing the broken pane. Place the light on a flat workbench covered with a thick cloth.

□ Turn back the leaves of the lead calme on one side of the pane. To do this gently insert the blade of an oyster knife or other thick, blunt knife between lead and glass at a point in the centre of the lead (fig.1).

□ Slide the knife back and forth with the handle as close to the glass as possible. This will slightly stretch the lead and at the same time you can rake out the cement or putty with the knife. Any attempt to open out the lead quickly, using the knife in the same way as you would a screwdriver to open a can, will damage the lead.

□ Work gradually, and progressively raise the handle of the knife so that the lead opens up smoothly.

You will find it impossible to open up the corners properly because of the soldered joints at the intersections of the calmes, so the lead will have to be cut at this point.

□ Turn a lead cutting knife so that the blunt edge of the knife lies against the glass and the sharpened end points into the corner, then push the sharpened end into the lead join, cutting it more or less down the centre of the angle formed by the joined calmes.

□ Cut and open up all the corners round the pane, then continue opening up the lead calme until it is bent out at right angles.

□ Remove the glass. If the damaged pane is just cracked you may have a little difficulty in removing the glass. If you don't want to keep the glass, pad the glass with newspaper on both sides and gently tap with a hammer. Carefully take out the pieces and sweep up any fragments before discarding. If you wish to save the glass do not tap it with a hammer, but spend a little more time gently easing away from the lead.

Coloured glass and lead window is typical of late Victorian and Edwardian porches. You may find that the lead calme has been pushed out of place or pieces of glass are missing. Don't worry if colours do not match exactly.



The new glass. Once all the old glass is out it is time to fit the new glass. Make sure that the leaves of the calme are neatly bent straight out, then make a tracing of the opening using a piece of paper and a pencil (fig.2).

□ Cut round the tracing and see that it fits neatly inside the opening.

□ Cut a fresh piece of glass using the tracing as a pattern. Place the pattern on the glass and draw round it with a felt-tipped pen. Following the instructions in Glass chapter 4, page 450, cut out the glass.

You may find that, although the glass has been accurately cut, it will not easily fit into the opening. This is because it is difficult to open up the lead completely. To get the glass to fit the corners of the glass must be gently rounded; this is done with blunt pliers or grozers.

□ Wear goggles and hold the glass in one hand. Take a grip of the corner with the pliers and firmly jerk down away from your face (fig.3). Once the corners have been rounded off the new piece of glass should fit neatly inside the lead.

□ Hold a palette knife against the glass and gently rub the lead down on to it so there is an even, parallel gap between lead and glass equal to the thickness of the knife. Use a lathekin or smooth piece of wood to press the lead down to the blade of the knife.

□ Move the knife and lathekin up and down the lead, pressing as you go. The joins in the calme where you have cut into the thick, soldered lead may be hard to press down in this way. If you have any difficulty gently tap the lead with the flat side of the hammer, supporting the other side of the glass with your hand.

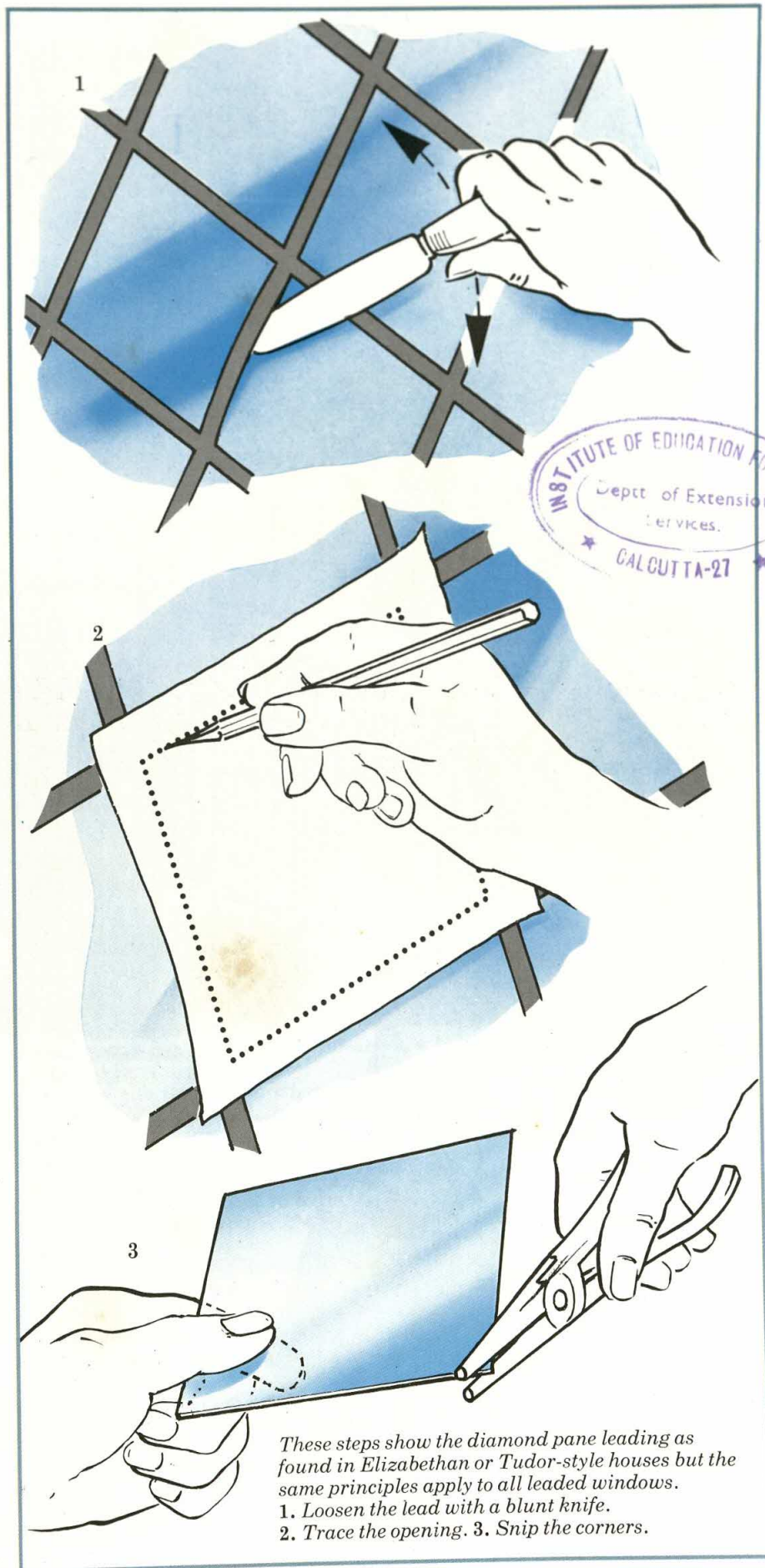
Soldering. Clean the calme joins with wire wool or a wire brush. This is important as the solder will not adhere if the lead is not absolutely clean. Also clean the end of the soldering iron. Solder each calme join following the instructions given in Glass chapter 7, page 798.

Turn the window over and solder the other side.

Puttying. Spread newspapers over the working surface. Mix up a small amount of putty with lampblack or grate black to produce an evenly black compound.

□ Using an oyster knife or other strong, blunt knife press the putty into the crack between the glass and the lead all the way round one side of the pane. Be thorough about filling in the gaps between lead and glass. Clean off any excess putty with a palette knife.

The repaired window is now ready to be replaced into its original window frame. Replace it in the same way as it was originally fixed.

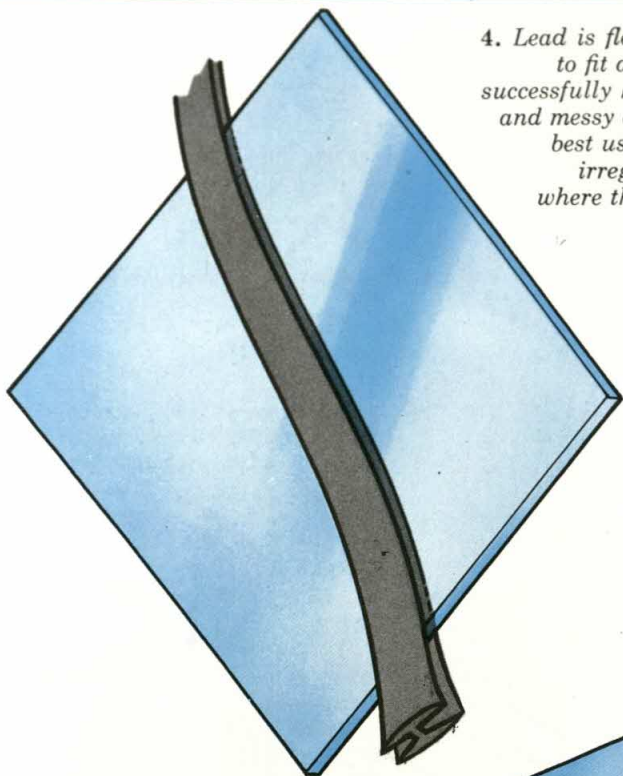


These steps show the diamond pane leading as found in Elizabethan or Tudor-style houses but the same principles apply to all leaded windows.

1. Loosen the lead with a blunt knife.

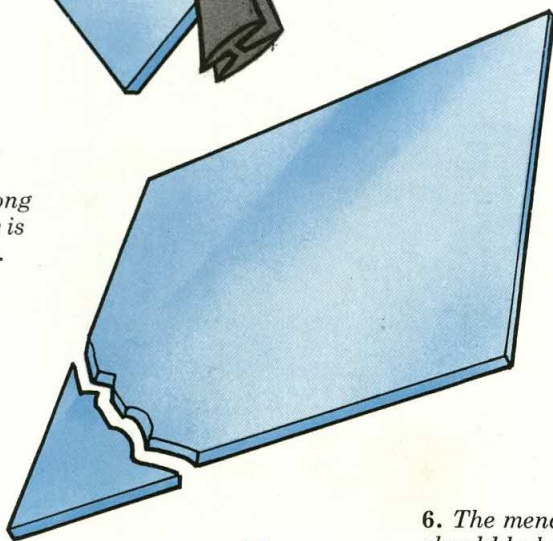
2. Trace the opening. 3. Snip the corners.

4. Lead is flexible and will bend to fit along a break. It will successfully hide a badly chipped and messy edge. This method is best used for windows with irregularly-shaped panes where the lead pattern is not so obvious.

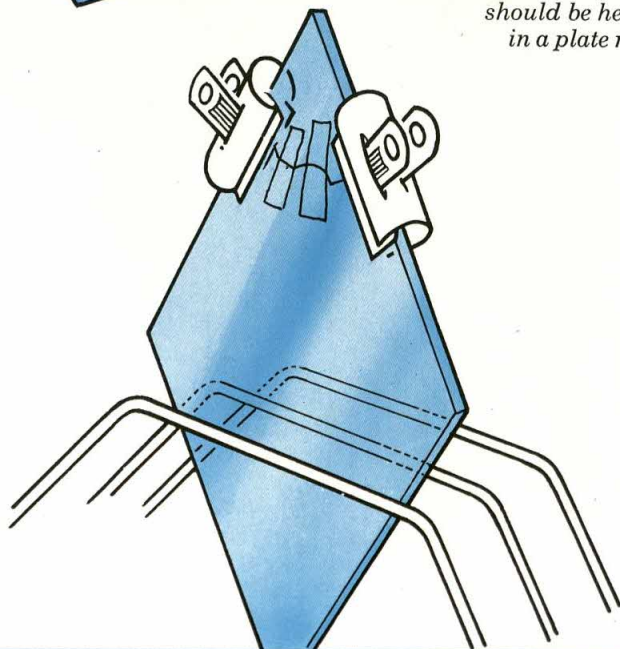


Repairing with adhesive

5. A good fit along the broken edge is most important.



6. The mended section should be held upright in a plate rack or bed of sand.



Repairing glass with lead

A break in glass can be mended by joining with lead calme. This is strong and perfectly satisfactory though, of course, the lead is plainly visible. Several breaks in one pane of glass can be mended though you will need fairly large pieces of glass before this method becomes feasible. A badly chipped break can be satisfactorily mended with lead.

You will need:

Tools as for replacing the glass.

Materials

Length of double-channelled lead calme long enough to slot along the break.

Tinman's solder, flux, putty, wire wool, lampblack.

Felt or other thick cloth for padding the glass.

□ Remove the light as previously described, open up the leaves of the lead and carefully take out the damaged pane of glass.

□ Make sure that the lead is bent out at right angles and that the corners are cut back.

□ Stretch and straighten the new piece of lead and open out the leaves with a lathekin or oyster knife.

□ Place the lead on a flat surface and fit the broken glass into the channels (fig.4).

□ Make a small mark on the lead about 1.5mm ($\frac{1}{16}$ ") in from both ends of the crack in the glass, remove the lead from the glass and cut with a cutting knife.

Each break in the glass is mended with lead.

□ Replace the lead and test the leaded glass for size in its appropriate gap in the window. You will probably find that the repaired section is too large for its frame since the lead calme takes up extra space. In this case nibble cautiously at the outside edges with the grozers or blunt pliers, testing for size as you go, until the glass fits.

If there is more than one break in the pane of glass the next step is to solder the join where the two lead calmes meet. Clean each join and solder on both sides.

□ Replace the pane in the window and rub the lead down on to the glass following the method described in the section on replacing glass.

□ Solder all the joins of the lead on both sides.

□ Putty the crack between glass and lead and replace the window in its original frame.

Repairing with adhesive

This is practical with glass which is broken in several small pieces and which you wish to retain rather than replace. The method for repairing the glass in a window is basically the same as repairing any glass article.



You will need:

Tools: as for replacing the glass.

Materials

Epoxy adhesive such as Super Epoxy which is almost clear in colour. Other epoxy adhesives are slightly stronger but give an opaque, rather yellowish tinge to the repaired break.

Oil paints for tinting the adhesive (optional).

Supporting bed such as a metal tray filled with fine sand or a support such as a plate rack for holding the glass while the adhesive is hardening.

Adhesive tape to hold together the broken sections of glass.

Two bulldog clips (optional).

Wire wool or an old stiff toothbrush.

Tinman's solder, flux, putty, lamp-black and felt or a thick cloth for padding the glass.

☐ Remove the light and the damaged pane as previously described.

☐ Wash the broken pieces of glass in

warm, soapy water, rinse in clean water and carefully dry.

☐ Lightly rub the broken edges with wire wool or a toothbrush to clean them.

☐ Before doing anything else fit the pieces of glass together to see if you can get a good join and to estimate how much adhesive you will need to apply (fig.5).

☐ Mix up the epoxy adhesive with a small quantity of oil paint (if you need a coloured finish to match coloured glass). Spread a thin layer of adhesive along one edge of the glass. Be sure to keep the layer thin.

☐ Put the two pieces of glass together as before, adjust and press until you have a good fit.

☐ Stretch the adhesive tape across the join at right angles to hold it firm.

☐ Fit bulldog clips at each end of the join to hold the pieces very firmly together.

In this type of plain glass and leaded window the pattern of the leading is all-important and it would be a pity to repair broken panes with lead. In this case repair with adhesive.

☐ Repeat for any other breaks in the glass.

☐ Place the pane of glass in the plate rack or bed of sand (fig.6).

☐ After two or three hours, when the glass can be handled, scrape off any surplus adhesive with a trimming knife. Alternatively, clean the glass of adhesive when it has finally set though this will be more difficult.

☐ Leave to completely harden for two or three days.

☐ Replace the pane of glass in its frame, rounding the corners with pliers or grozers if necessary. Solder the surrounding lead as previously described, putty and replace the window in its frame.

Neat, elegant panelled shades

Cloth —
lampshades 3

A panelled cover for a lampshade is made from sections which are fitted and stitched to the frame individually. It is the best type of cover to use on square or hexagonal frames, some half frames, and on covers where you are using a fabric which has almost no flexibility, such as glazed chintz. It is also a good method to use where you are using a sheer fabric—such as lace, chiffon or voile—which needs to be backed, where you are using a piece of embroidery or appliqué for one or two of

the panels, or where you want to combine two different fabrics of different flexibility.

The lining

These types of lampshades are usually difficult to fit with an internal lining (one which is placed on the inside of the frame to hide the struts), but they can be 'lined externally'. This type of lining is really a secondary cover because it is fitted on the outside of the frame in the same way as the cover. It

is attached to the frame before the cover, which is stitched over it. External linings are also useful for dark-coloured lampshades where you need a white lining to help reflect the light up and down.

Choose a lining which enhances the cover fabric. Jap silk or crepe-backed satin (which can be used with either side facing into the frame) are both suitable for velvet and silky sheer fabrics, whereas a light cotton fabric is a better choice for a cotton voile, broderie anglaise or chunky lace. Allow the same amount of lining as for the cover fabric. (For calculating the amount of fabric, see Lampshades chapter 1, page 1164.)

The binding

Because the binding shows inside the finished lampshade, it is often a good idea to dye it to match the lining if you are using any colour other than white. Use a permanent cold water dye, then rinse the tape carefully so that all the excess dye is removed to prevent the possibility of it running later on when the lampshade is washed. Buy enough binding to cover all the struts and both rings. (For preparing and binding the frame, see Lampshades chapter 2, page 1184.)

The trimming

As well as the normal trimming round the rings of the frame, the stitching on the struts is also neatened by a trimming. Choose a neat unobtrusive trimming such as velvet ribbon or, if you have any spare fabric, you could cut bias strips for a self-trimming. Measure the length of the struts and buy enough to cover each one, plus the circumference of each ring. Allow about 7.5cm (3") extra for turnings.

Fitting the fabric

Although the lining and cover fabrics are fitted in a similar way, each piece should be attached to the frame separately because one of the fabrics may stretch more than the other which would cause wrinkling or sagging if they were fitted together.

Start by fitting the lining, remove the lining from frame and fit the cover.

□ Measure the section of the frame to be fitted first (it does not matter which one you choose), over its widest and longest part. Cut a rectangle of fabric on the straight grain to the same dimensions, plus 5cm (2") all round. Mark the centre of each side of the rectangle with tailor's chalk.

Covering a square, sectional frame with separate panels of fabric. All the struts are bound with tape because the fabric is stitched to them as well as to the rings.



Mark the centres of the corresponding section on the top and bottom rings and on both struts on the frame.

□ Place the fabric, right side out, on to the section so that the centres are aligned. Pin the fabric to the rings and struts at these points (fig.1).

On frames with straight or convex rings, tighten the fabric between the centre points on the struts, keeping the grain absolutely straight between them. Working upwards, pin the fabric to the struts so that it is quite taut. Pin down to the bottom in the same way (fig.2).

□ Starting from the centre and working outwards, pin the fabric to the rings along the top and bottom, tightening just enough to remove any wrinkles and to obtain a smooth curve along the edges.

Frames with concave rings. In order to maintain the correct shape of the panel pin and tighten the cover between the rings first and then pin it to the struts (fig.3).

Marking the panels. Using a sharp pencil or tailor's chalk mark the line of the rings and struts on the fabric (fig.4). Remove the fabric from the frame.

□ Place the marked panel on to a rectangle of fabric cut to the same size, matching the grain and with wrong sides together. Pin all round just outside the marked lines. Work tailor's tacks at 1.5cm ($\frac{1}{2}$ ") intervals along the marked lines, remove the pins and cut through the tailor's tacks (fig.5).

Cut as many panels to this size as needed and then fit and cut any panels of different size in the same way.

Stitching the fabric

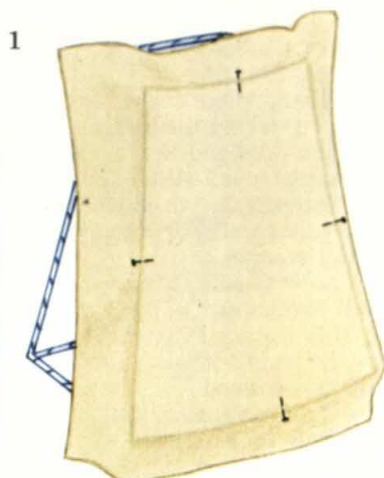
Stitch the lining panels to the frame first and then stitch the cover. If the shade is unlined follow the instructions for stitching the lining.

Stitching the lining. Replace one of the lining panels on the frame and pin in position so that the tailor's tacks are in line with the struts and rings. Tighten the fabric if necessary to remove any wrinkles and check that the straight of grain is quite vertical and horizontal.

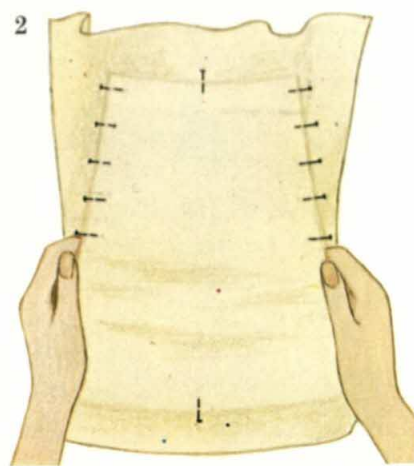
□ Oversew the panel to the bound frame all round the edges, keeping the stitches as small and close as possible and placing them on the outside of the struts and rings. Trim the excess fabric close to the stitching along the struts but leave it along the rings (fig.6).

□ Fit the corresponding panel on the opposite side of the frame in the same way, then fit the side panels.

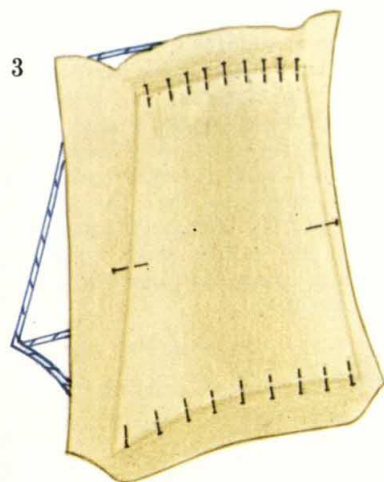
Stitching the cover. Replace the panels on the frame and stitch as for the lining. Trim off the excess cover fabric only as close to the stitching as possible all round.



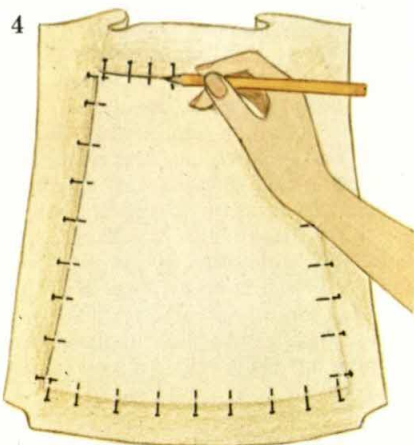
1. Pinning the fabric to the frame in the centre of each side.



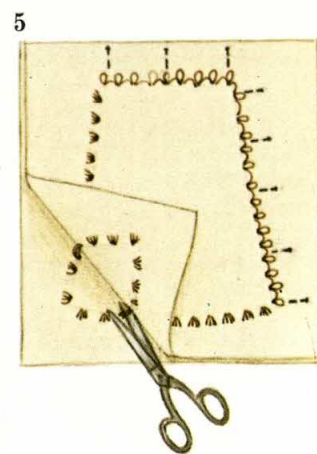
2. With straight or convex rings tighten the panel horizontally.



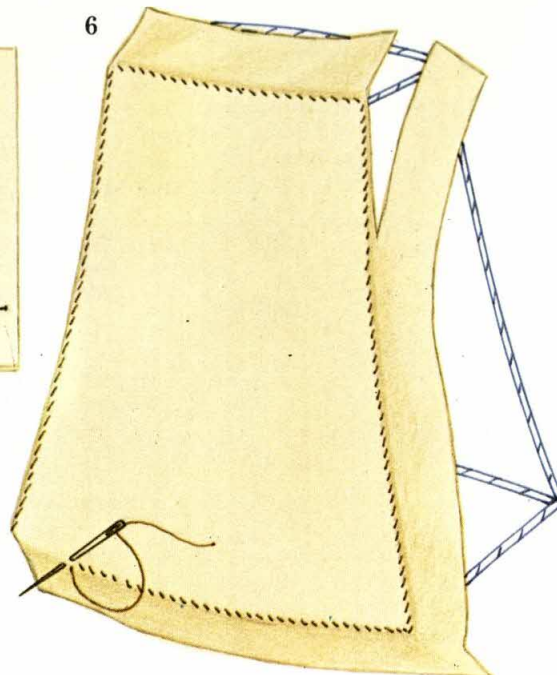
3. With concave rings tighten the panel vertically to keep the shape.



4. Marking the line of the rings and struts on the fabric.



5. Marking the opposite panel with tailor's tacks.



6. Sewing the panel to the frame and trimming the excess fabric from the struts.

Attaching the trimming

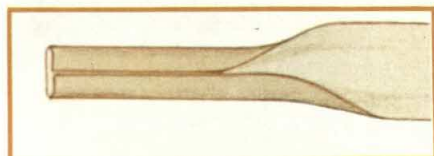
Fold back the excess lining (or cover) fabric over the stitching along the rings and stitch down. Trim off excess fabric close to stitching (fig.7).



7. Trimming excess fabric from the top and bottom rings.

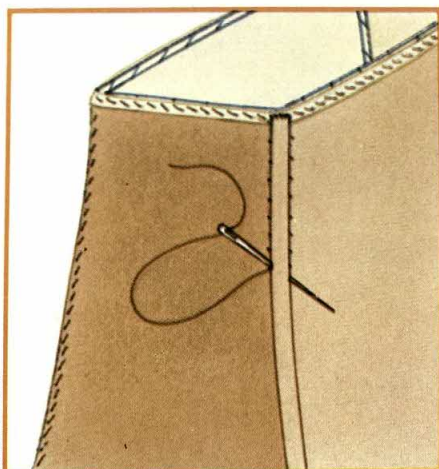
Velvet or braid trimmings. Trim the struts first by cutting a length of trimming equal to the length of the struts and sticking on with adhesive (see Lampshades chapter 2, page 1184). Trim the rings in a similar way. If you would rather sew the trimming on, follow the instructions for stitching the self-trimming on the struts below.

Self-trimmings. For the struts cut 1.5cm ($\frac{1}{2}$ ") wide bias strips of fabric equal in length to the struts. With the right side facing out, fold over the raw edges of the strip to meet at the centre and press carefully with an iron (fig.8). Be careful not to stretch the strip.



8. Folding the bias strip.

□ Place the strip centrally on to the strut so that it covers all the stitching and raw edges of fabric and pin at the top and bottom so that it is quite taut.



9. Stitch bias strip over the struts.

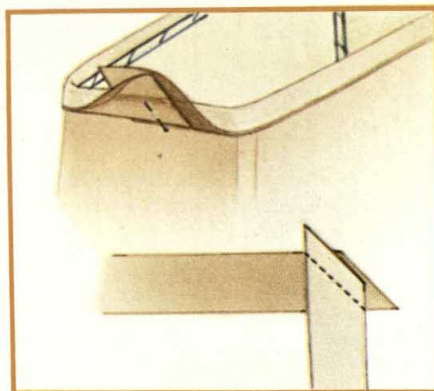
□ Starting at one of the rings, stitch one end of the strip to the ring.

Pass the needle a little way along the fold down one long edge of the strip and pull out. Make a small stitch into the cover fabric at the edge of the fold, return the needle to the fold so that it forms a very small stitch and pass the needle through the strip to the opposite edge in a diagonal movement (fig.9).

□ Make another small stitch into the fabric on that side, being careful not to pull the thread too tightly or the strip will pucker. Continue like this along the length of the strut and stitch along the other end.

□ For the rings cut 3cm ($1\frac{1}{4}$ ") wide bias strip equal in length to the circumference of each ring plus 1.5cm ($\frac{1}{2}$ ") for turnings.

□ Fold each strip in half lengthwise with the wrong side facing out. Place the strip round the appropriate ring so that the raw edges are level with the turned back edges of the fabric and the bulk of the strip extends beyond the frame. Stretch the strip round the ring slightly if the struts bow inwards. Pin the short ends together along the straight grain so that the strip fits tightly (fig.10). Remove the strip, open it out and stitch, with right sides together, along the pinned line. Press the seam open.



10. Join the bias strip for trimming top and bottom rings by overlapping the ends and pinning. Tiny holes mark the seam line when the strip is re-pinned with right sides facing.

□ Refold the strip with the right side facing out and place it on the frame as before. Oversee the double strip in place firmly all round, making sure that the outer edges of the stitches come to the outer edge of the ring. Fasten off securely and turn back the strip on to the frame so that the fold is level with the rings and the stitches and raw edges are covered. If the strip is sitting well, leave it and do not stitch the inner edge. If you feel it necessary, however, press it lightly with your fingers and slip stitch neatly along the inner edge.



Shades with square, oblong and hexagonal top and bottom rings are made with panelled covers where the fabric is fitted in sections to each side. On the cream shade the fabric is fitted in one piece to the panel and bottom gallery.



Icing cookies is child's play

Edible arts 2



It's fun to make mud pies, build sand castles and mould fantastic shapes in plasticine—but the results make disappointing if not disastrous eating.

Real cookies are far more rewarding. Kids can use their creative skills and enjoy a delicious tea-time treat at the end of the afternoon.

Happy hours can be spent designing biscuit shapes and, once the biscuits are cooked, there is the joy of icing and decorating. Even adults will find these ideas fun and may want to try them on a somewhat more elevated level, in order to make entertaining presents for children.

The shortcake biscuit recipe given here is simple enough for children to prepare unaided. Small children must not, of course, be allowed to touch the oven; an adult should place the baking tray in the oven and remove it when the biscuits are cooked.

The dough is easily handled but, if it becomes too soft, it can be wrapped in

foil and chilled in the refrigerator for 20-30 minutes. Alternatively, knead in a little extra flour—up to 25gm (1oz).

Making picture shapes

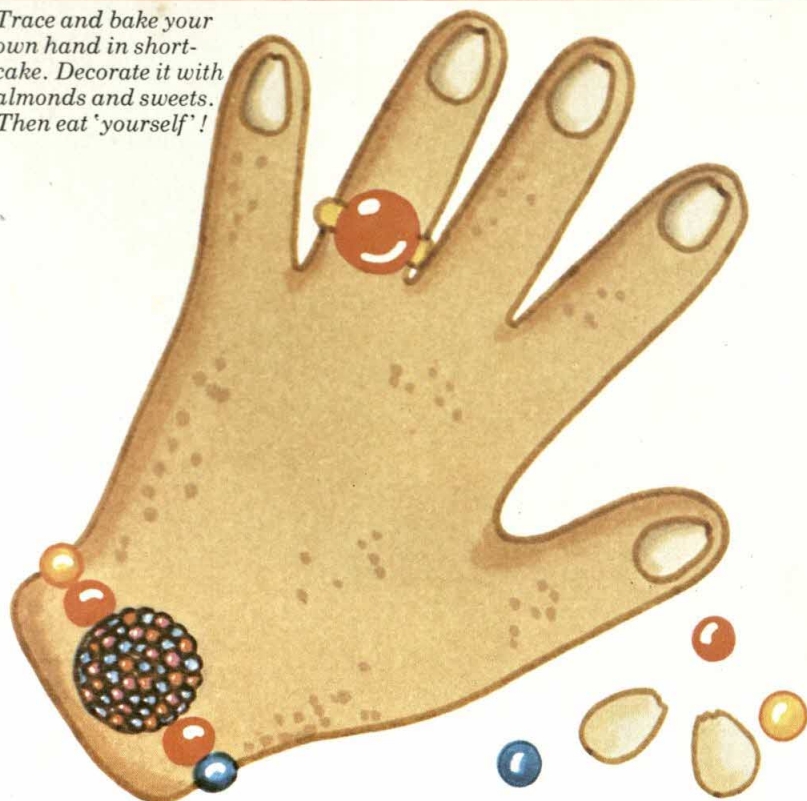
Children will find it fascinating to turn their own painted pictures into edible works of art.

It's exciting to create special pictures of animals, people, ships, trains or buildings, then cut the traced outline in dough with a rounded knife blade.

It's fun, too, to 'paint' the cooked pictures with lots of icing and other delicious decorations.

It's also fun to put your hand on the dough, trace round it with a cutting wheel, and bake your 'hand'. Then decorate it with an icing watch, bracelet or rings. You could use split blanched almonds for finger nails, perhaps dipped in a little melted chocolate for anyone whose finger nails are not always that clean!

Trace and bake your own hand in shortcake. Decorate it with almonds and sweets. Then eat 'yourself'!



Delicious decorations

If the dough is simply rolled into balls between the hands, or if shaped biscuit cutters are used, the children's main pleasure will be concentrated on decorating the cooked biscuits, so a generous supply of materials will be needed. A popular selection might include blanched whole nuts, chopped nuts, candied peel, currants, chocolate sprinkles, multi-coloured hundreds and thousands, sugar-coated flowers, silver balls, desiccated coconut, icing sugar, glacé cherries, sugar-coated chocolate drops, glacé icing and butter icing (which the children can make for themselves while biscuits cool.)

Shortcake biscuits

You will need:

- 125gm (4oz) soft margarine.
- 75gm (3oz) butter.
- 50gm (2oz) sifted icing sugar.
- 150gm (5oz) sifted plain flour.
- 125gm (4oz) sifted self-raising flour.
- 1 tablespoon cornflour.

☐ Place margarine and butter in a bowl and beat well.

☐ Gradually add the icing sugar and continue beating the mixture till light and fluffy.

☐ Then work in the two sifted flours and cornflour. Knead lightly to make a smooth dough.

☐ Wrap the dough in tin foil and chill for 30 minutes.

☐ Heat the oven to 180°C (350°F), gas mark 4.

☐ Lightly flour the pastry board and roll out dough to 6mm ($\frac{1}{4}$ ") thick.

☐ Cut out biscuits, place on baking trays and cook for 15 minutes or until light brown.

☐ Cool for one minute then transfer to a wire rack. Decorate when cold.

Butter icing

You will need:

- 50gm (2oz) butter.
- 125gm (4oz) sifted icing sugar.
- 2 drops vanilla essence.
- 1 tablespoon milk.

☐ Cream the butter lightly.

☐ Beat in the icing sugar a little at a time. Continue beating till really light and fluffy.

☐ Then beat in the vanilla and milk.

Glacé icing

You will need:

- 50gm (2oz) sifted icing sugar.
- $\frac{1}{2}$ -1 tablespoon lemon juice or warm water.

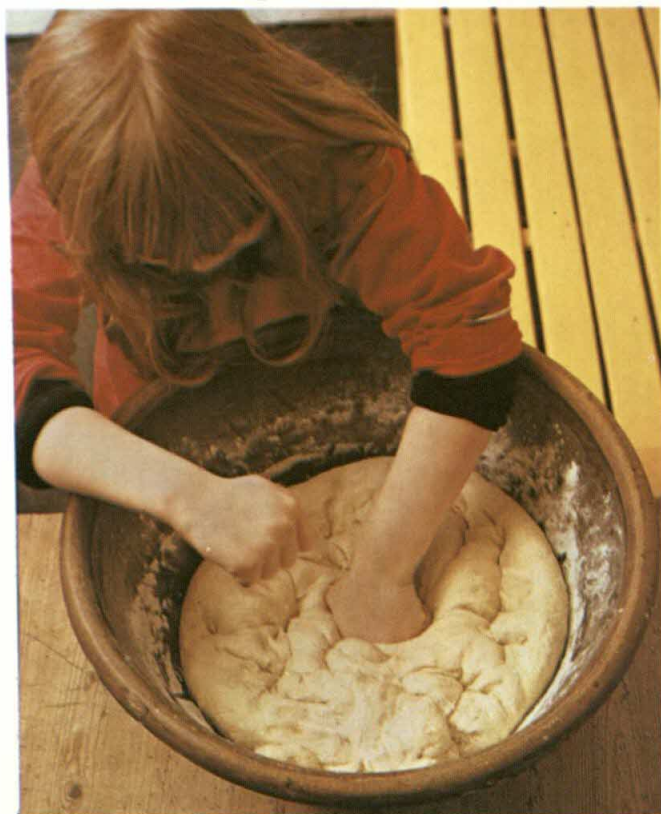
☐ Put the icing sugar in a bowl and add half a tablespoon of liquid.

☐ Beat well with a wooden spoon.

☐ If the icing is smooth and of a consistency that will coat the back of the spoon no more liquid is needed. If not, add more liquid to get the right consistency.



Bunny biscuits



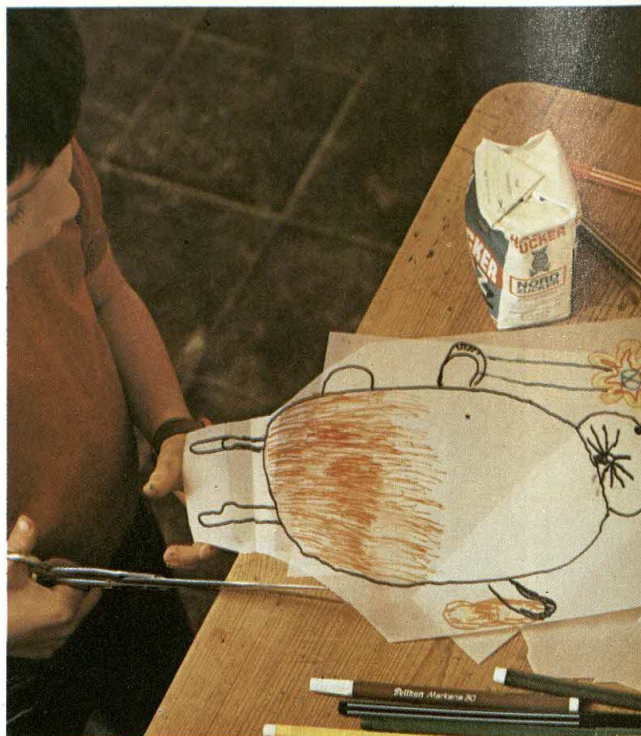
1. Lightly knead the shortcake biscuit mixture (recipe on page 1218) to make a smooth dough. Wrap it in foil and chill in the refrigerator for 30 minutes.



2. Meanwhile paint your pictures. It saves time if you paint them on tracing paper. Try ideas like bunnies, tortoises or houses. Keep shapes bold.



3. Make things like rabbit's ears and legs quite big because thin, protruding bits of biscuit may get broken off before cooking is completed.



4. Using scissors, cut out your traced pictures. Cut the rough shape first, as shown here, then cut round the actual outlines you have drawn.



5. Place the tracing on the chilled and rolled out dough. Use one hand to hold the paper firmly in position while you cut round it with a knife.



6. A round-bladed knife will cut the dough without tearing it. While the biscuits cook, prepare some glacé and butter icing (recipes on page 1218).



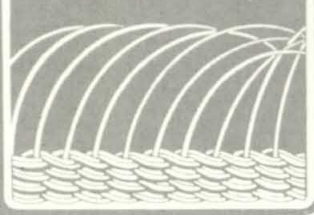
7. When the cooked biscuits are cold, begin to 'paint' them. You can use sweets and nuts as well as icing. Edible silver balls make fine necklaces.



8. Completed bunny biscuits look almost too good to eat but they are sure to taste too delicious to resist. Make several as presents for friends.

Square work and screwblocks

Basketry 8



Square work is the most difficult regular-shaped basketry to do. It is worked very differently from other shapes which have some sticks threaded through others to start the base. To start square work the base is not made with a criss-cross pattern of sticks as in round or oval work.

The terms square work or square basketry are used loosely as they denote baskets which have corners and are usually rectangular—very few baskets are ever really square.

Flat square work

To begin square basketry start practising by making flat bases. Two small square 'mats' will make a needlecase or a notebook cover. With more experience you can make binder covers for recipes and magazines, a cover for a scrapbook or use six square bases as a set of place mats. Working on a larger scale you can make window shutters and a headboard for a bed as shown in the next chapter.

Screwblock

A screwblock is used to start square work. Screwblocks can be bought from crafts stores but these tend to be very light and small and only suitable for very light work. It is easy to make one at home and also inexpensive.

The width of a square base is limited to the length of the screwblock. Normally 38cm (15") is adequate but for larger items—for example a headboard—you would need a screwblock 66cm (26") long.

You will need:

2 softwood strips 50mm x 75mm (2"x3"), 38cm (15") long (or, for a larger screwblock, 2 pieces of softwood 75mm x 75mm (3"x3"), 66cm (26") long).
Two 15cm (6") coach bolts with a diameter of 6mm ($\frac{1}{4}$ "). Wing nuts and washers to fit the bolt. These are suitable for both screwblocks.
Hand drill and bit large enough to drill

holes for the coach bolts.

□ Place the two pieces of wood together as shown in fig.1, and drill two holes 7.5cm (3") from each end. The holes are drilled through two pieces to make sure that the holes correspond.

□ Push the bolts through the holes and screw on the washers and wing nuts.

Using the screwblock

To start a base the stakes are placed upright between the two parts of the screwblock. The wing nuts are then tightened to secure the stakes.

The base sticks are cut to the length required plus 2.5cm-5cm (1"-2") for clamping in the screwblock plus enough to trim the ends once the work is complete.

The size of the cane used, the number of base sticks and the distance between the sticks will vary according to the size and function of the finished article. Generally the sticks on each edge are thicker than those inside so that the edges are neat and firm. Sometimes these outer sticks are doubled to give a really strong base.

If the outer sticks are thicker than the inner ones they won't fit into the screwblock without some preparation. The thicker sticks need to be cut down so that the part that is clamped in the screwblock is the same thickness as the smaller sticks. Make two cuts about 2.5cm (1") from the end of each of the thicker sticks (fig.2). Try to make the cuts as square as possible and not tapered. The sticks are now ready for the screwblock.



2. The thick outer sticks are trimmed to the same thickness as the cane used for the inner sticks.

Remember that the larger the article the thicker the cane must be and the number of sticks must also be increased. The distance between the sticks will determine the distance between the side stakes later, so don't have them too far apart. For small items place the sticks 12mm-19mm

($\frac{1}{2}$ "- $\frac{3}{4}$ ") apart and for medium-sized items 25mm-31mm (1"-1 $\frac{1}{4}$ ") apart.

Needlecase

The cover consists of two bases each measuring about 8.5cm x 12.5cm (3 $\frac{1}{4}$ " x 5") and could equally well be used to cover a notebook.

This will give you the necessary experience to embark on a larger project.

As the materials used are small in quantity, there is little waste if the results are not entirely satisfactory.

You will need:

28gm (1oz) No.3 (2mm) cane.
142cm (56") No.6 (2.6mm) cane.
71cm (28") No.12 (3.75mm) cane.
4 small panel pins.
2 binder rings 18mm ($\frac{3}{4}$ ") diameter—available from stationers.
Felt to fit inside cover.

No.2 (1.85mm) chair seating cane 1.83m (2yd) long, or narrow enamelled wrapping cane—optional.

Tools as used for previous chapters and a screwblock.

□ Cut 2 sticks of No.12 (3.75mm) cane and 4 sticks of No.6 (2.6mm) cane—all 18cm (7") long.

□ Trim one end of each of the thick sticks (fig.2).

□ Place these two sticks in the screwblock 7.5cm (3") apart—measure from the centre of one stick to the centre of the other.

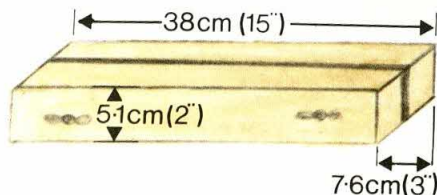
□ Place the 4 thinner sticks between the 2 sticks in the screwblock. Space them evenly and keep them upright.

□ Tighten the screwblock so that all the sticks are held firmly in position. You may have cut the outer ones too much or too little so that they, or the inner ones, wobble about. If so, adjust them or cut new ones—you cannot make a good base unless all the sticks are firmly held.

Although a square base is mainly randed, the first row is paired and the last row is mock paired.

□ Take a length of No.3 (2mm) cane and loop it round the left hand outer stick so that you have a long end and a short end of 20cm (8"). Use these 2 weavers and pair to the other end (fig.3).

□ Drop the short end and continue with the long end only. Take it round the right-hand outer stick and then rand back to the left. Continue to rand backwards and forwards but on every other round the weaver must be taken round the outside sticks twice. This is because as you rand backwards and forwards you pass twice over the centre sticks while going round each outer stick once only. The extra twist will prevent any grins (gaps) appearing along the thick sticks (fig.4). If the randing is packed down you will need less double twists—adjust the wraps



1. Making a screwblock.

The borders of the needlecase are whipped with enamelled wrapping cane to secure them to the base. Binder rings are used to assemble the needlecase with a piece of felt between the covers. Designer Barbara Maynard.

round the outer sticks as you work to cover the sticks but try to be constant, ie an extra wrap on every second or third round.

□ Measure the width of the work as you go along to make sure that the canes do not slope inwards or outwards. It is very important when doing square work to see that the sticks remain upright and parallel. Measure as you progress and don't let the sticks lean backwards or forwards.

Joining new weavers is done exactly as for round and oval work. Make sure that the ends always lie at the back of the work which will become the wrong side.

□ Continue randing until the work measures 11.5cm (4½") in height. There should still be a short length of the sticks showing beyond the randing. This is for the last row which is mock pairing.

Mock pairing

□ End the randing so that the weaver is on the left side of the work and has passed round the outer stick.

□ Mock pair by taking the weaver in front of one stick and behind one stick, but each time it comes to the front, thread it underneath the weaver of the previous row. It should look just like pairing (fig.5).

□ Continue all the way across to the end until the weaver reaches the right hand outer stick. Remove the work from the screwblock and trim all the weaver ends but do not cut any of the surplus stick ends yet.

□ Replace the work in the screwblock and tighten it. This is to put on the first border.

3-rod border for square work

Cut 6 border stakes 12.5cm (5") long and one piece 20cm (8") long, all from No.3 (2mm) cane.

Trim the surplus stick ends of the inner sticks only and place the screwblock and work so that the wrong side of the work faces you.

□ Insert one border stake into the weaving beside and to the left of each of the inner sticks. In this case (because the work is so small) insert the stakes about 2.5cm (1") into the weaving.

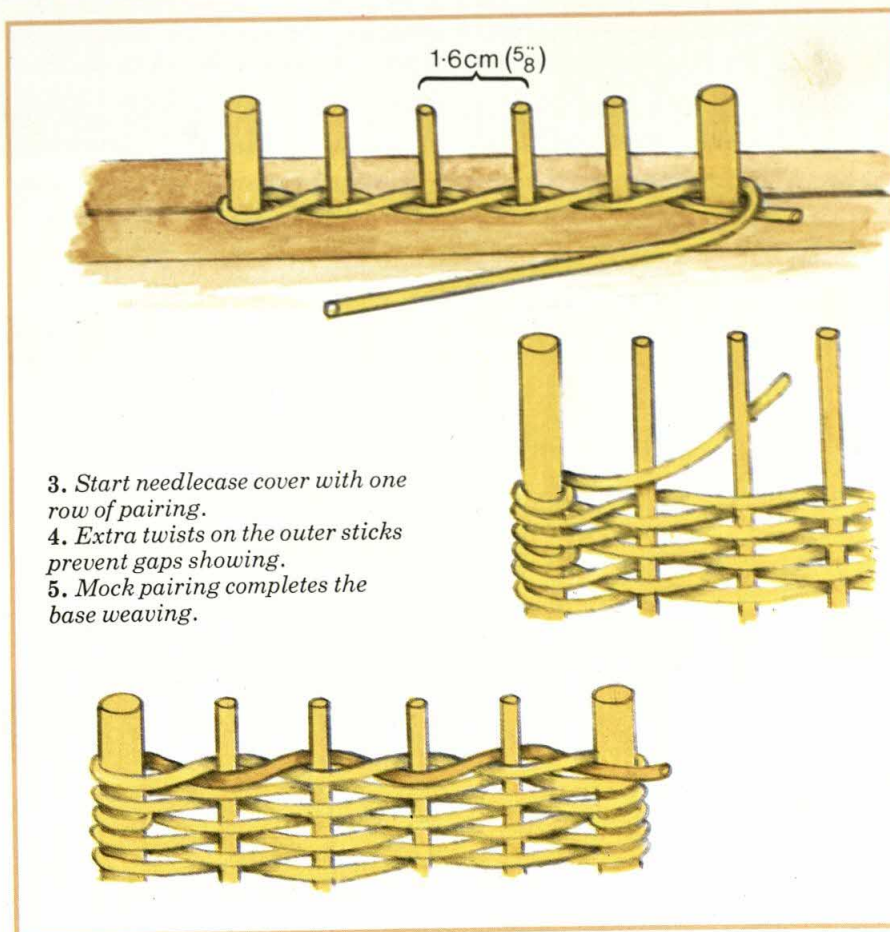
□ Insert one border stake down the side of the left outer stick.

□ Using a bodkin to help you, insert one border stake into the weaving in front of the left outer stick and bend this down to the front of the work.

□ Loop the 20cm (8") border stake in the middle and wrap it round the outer



Alistair Ogilvie



Barbara Maynard

left hand stick and the border stake next to it (fig.6). You should now have 3 stakes to the front and 5 still standing upright.

The 3 stakes to the front represent the first 3 stakes that are bent down to start a normal 3-rod border.

□ Take stake 1 and pass it in front of the outer stick and stake 3 and behind stake 5 and back to the front (fig.7). Bend stake 3 down to lie behind and beside stake 1.

□ Take stake 2 in front of stake 5 and behind stake 6 and back to the front.

□ Bend stake 5 to lie behind and beside stake 2.

□ Take stake 4 in front of stake 6 and behind stake 7 and back to the front.

□ Bend stake 6 down to lie behind and beside stake 4. You will now have 3 pairs to the front (fig.8).

On a larger edge you would continue with a 3-rod border in the usual way but for this small base there is room for only one more stake.

□ Take the fifth stake from the right in front of stake 7 and behind stake 8 and back to the front.

□ Bend down stake 7 from last pair.

Finishing the 3-rod border

□ Take stake 3, the longer of the pair, in front of stake 8 and up to the right hand outer stick.

□ Nip this border stake so that it will bend down just before the outer stick. Cut it off about 3.5cm (1½") below the nip and point the end. Push the pointed end into the weaving beside the outer stick (fig.9).

□ Bend down stake 8 (the last one) and pass it behind and right round the

outer stick and thread it under the bent down stake (the last one you used) from the front to the back (fig.10).

This stake can be left there so trim it neatly or it can be threaded through the work once more so that it lies on the same side as all the other ends—which is the back of the work.

□ Secure the border by hammering a small panel pin into the border stakes that went round the two outer sticks, and into the outer sticks (fig.11).

□ Put on the same 3-rod border on the other edge. Start with the wrong side of the work facing you.

□ Cut off the protruding outer sticks close to the border and trim off surplus border stake ends.

Whipping

The border can be secured further by binding it in one or two places with fine chair seating cane. This is known as whipping.

□ Insert the cane into the weaving about 18mm (¾") down from the border between two stakes. Use the long end to bind over the border and back through the randing at the same place 7 or 8 times. Wrap the short end in as you work. Try to make the whipping fan out over the border but keep it in the same place in the randing.

□ Secure the end by looping it once or twice through the whipping at the back and then weave it away.

□ Work another base in exactly the same way for the other cover taking great care to keep them both the same size.

□ Put 2 binder rings through the weaving on one side of the covers and

cut felt to fit. Make holes to coincide with the rings and insert between covers to complete.

Magazine cover

Two bases measuring 23cm x 33cm (9"x13") are joined with two binder rings to form the cover.

You will need:

170gm (6oz) No.6 (2.6mm) cane.

No.15 (4.5mm) cane 3.66m (4yd) long.

10mm handle cane 1.83m (2yd) long.

4 small panel pins.

3 binder rings.

No.4 (2.25mm) chair seating cane or wrapping cane 3.66m (4yd) long—optional.

□ Cut 2 sticks of 10mm handle cane 38cm (15") long, and 6 sticks of No.15 (4.5mm) cane 38cm (15") long.

□ Cut one end of each of the 2 thick sticks to fit into the screwblock with the other sticks.

□ Arrange the sticks in the screwblock so that the 2 outer ones—centre to centre—are 23cm (9") apart and space the inner sticks evenly.

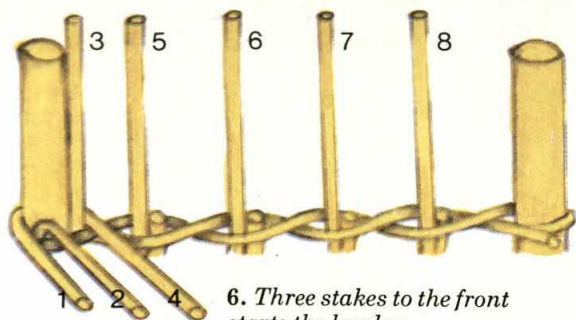
□ Using No. 6 (2.6mm) cane put on one row of pairing.

□ Rand for 31cm (12¼") and put on one row of mock pairing.

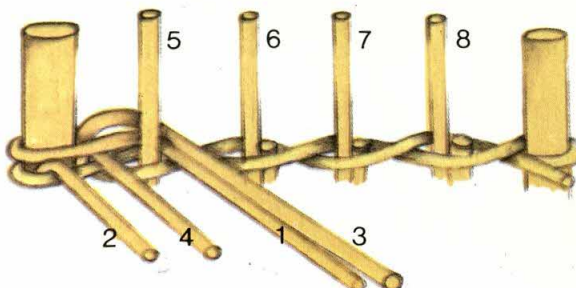
□ Using No.6 (2.6mm) cane border down as for the previous cover. You will need 9 stakes 20cm (8") long and one to loop round the outer stick 38cm (15") long.

□ Pin the border down with panel pins and whip with chair seating cane if you wish.

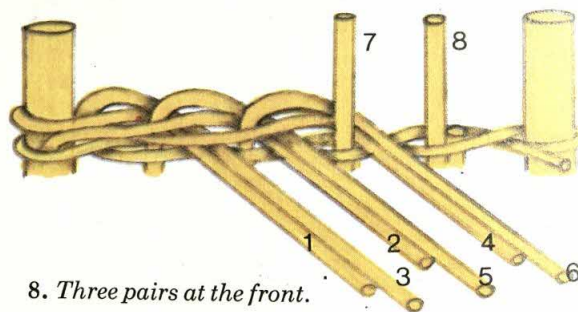
□ Repeat the above to make the second cover. Insert binder rings to complete.



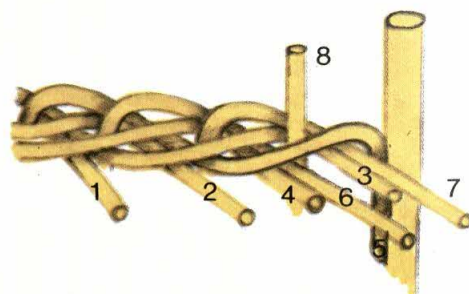
6. Three stakes to the front starts the border.



7. Stakes 1 and 3 form the first pair.



8. Three pairs at the front.

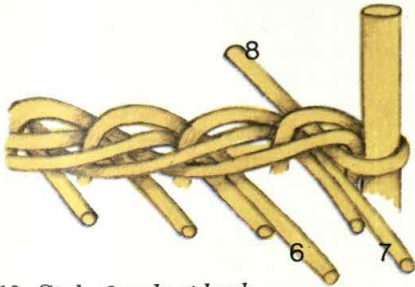


9. First stage in finishing border.



Completed binder cover with whipped borders. Below: detail of rings used to assemble the covers.

Jerry Tubby



10. Stake 8 ends at back.



11. Nail secures border to outer thick stick.



Dick Miller

Cross stitch alphabet

Yarn —
embroidery 8



Cross stitch has long been a favourite for embroidered lettering and monograms because it is quick and easy to work. No preliminary outline or transfer is needed when an evenweave fabric is used for the background because the fabric threads can be counted to form each letter (see Embroidery chapter 7, page 1192).

Although cross stitch designs based on counting threads are necessarily geometric in formation, they still leave plenty of opportunity for embellishment, as shown by the alphabet in the photograph. These letters have been worked in a modern version of the popular Victorian sampler, but you can easily extract the appropriate letters from the chart and use them individually to give a personal finish to your table linen or sheets, or you could combine them to form a monogram to decorate the pocket of a dress or the flap of a bag.

The alphabet in the photograph is worked on an evenweave cotton with 7 threads to 1cm (18 threads to 1") in stranded embroidery cotton, using three strands throughout. Each stitch is worked over one thread of the fabric and the letters are about 3cm (1¼") high.

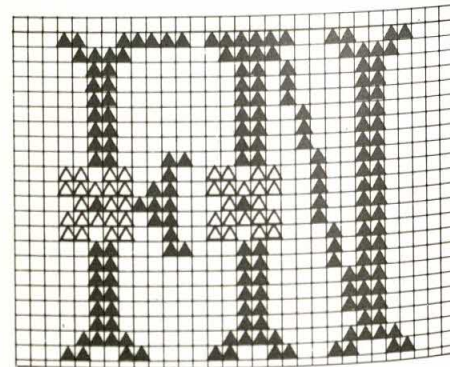
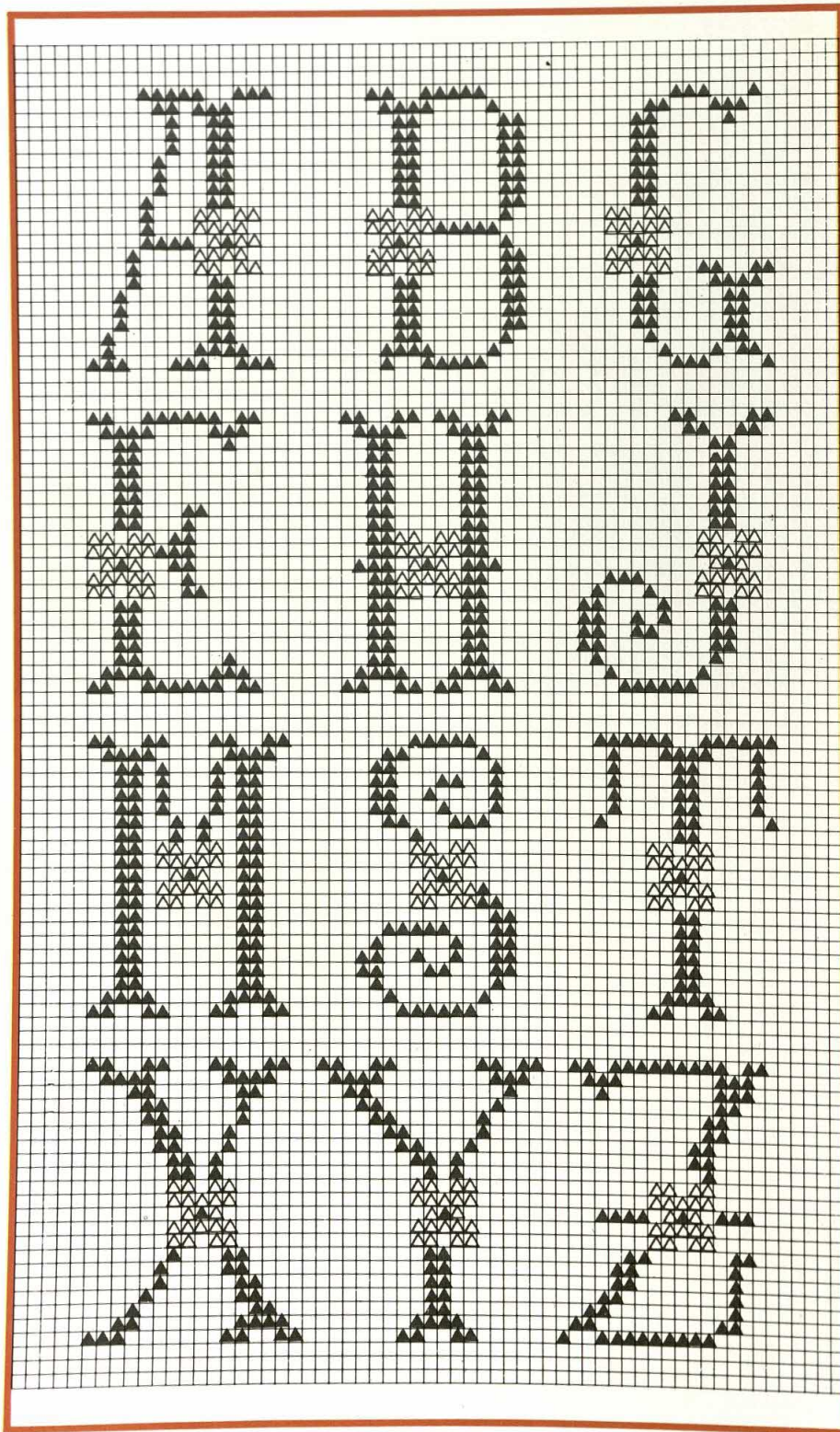
Enlarging the letters. If you simply want to double the size of the letters—and this means increasing their width too—you can work the stitches over two threads of the fabric.

Alternatively, work four stitches for every one stitch indicated on the chart. If you do not want the increase to be so great, you can work the stitches over two threads but on a finer weave fabric.

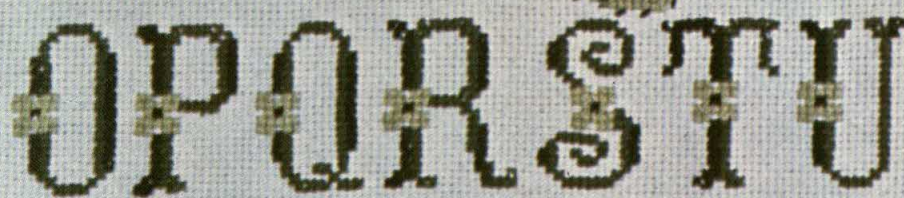
Reducing the letters. The only method of reducing the size of the letters is to use a finer weave fabric.

Monograms—composite intertwined initials—are fun to plan and work. The initials may be arranged so that the base lines are level or you could place them diagonally (fig.1).

Sketch out your monogram on graph paper before you start work so that you can see how the initials link and where they will have stitches in common.



1. Combined initials for a monogram.
Left. Chart for alphabet.



First steps in sculpting wood

Wood — modelling 3

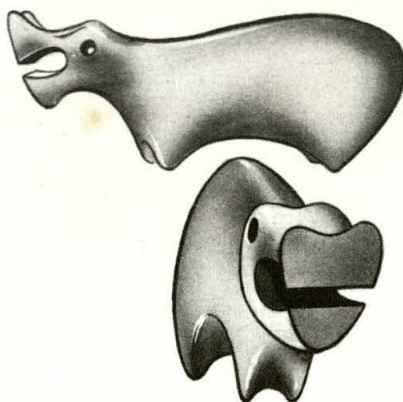


Carving and modelling is probably the most creative way of working with wood. These and the following chapters set out to give the beginner a step-by-step guide to sculpting and carving wood. However, it helps to get the basic terminology—low relief, high relief and three-dimensional work—clear at the outset.

Low relief



High relief



3-dimensional design

Low and high relief are only worked on the front of the wood while the back is left flat. Low relief virtually interprets a 2-dimensional, linear design on

the surface of the wood and is usually worked with gouges and chisels. In high relief, the contours are much more developed. In both cases, the design is only intended to be seen from the front.

Three-dimensional sculpture is made in the round. For this you have to consider how the piece will look from the other side, from above, below, and on.

It is easier to work up the three-dimensional sculpture via high relief so this chapter shows how to succeed with a simple, high relief crocodile design. Here are several tricks of the trade which should help you to be pleased with the outcome.

Good outline. A clear, well-drawn and easily recognizable outline is more than half the battle. Study silhouettes, outlines in photographs and drawings; analyse which shapes work as 'profiles', which ones are inexplicable unless they are filled in with detail.

Contour. To make high relief effective, you need to work out some simple contours, rather like the lines on a contour map. Plot out the 'hills' and 'valleys' that will indicate roundness and hollows on the model.

Appropriate tools. For most medium-scale high relief and three-dimensional work the Surform type of rasping-and-filing tools are excellent for beginners.

Clamping. It is essential to have work firmly anchored, either with a vice or clamp, so that it cannot wobble about.

Grain. Let the wood help you. Explore and exploit the beauty of the grain, use it to emphasize the contours and, if there are any knots or splits, try to incorporate them into the design.

Tool box

Surform tools (Modelling chapter 1, page 268) are used to remove the waste wood. To obtain a specific curve or contour the appropriate size tool is essential. The size of the Surform tool required for each project will be given. Initially, two Surforms are sufficient. A flat standard Surform with blade No.21-101 (UK), No.295 (USA) and a round Surform No. 21-124 (UK), No.297 (USA) are the only shaping tools required. These are average-sized tools and are suitable for most projects except those requiring small detail.

Clamps and vices. The wood must be clamped to hold it while being shaped. A G-clamp will do but a vice will make later work easier. The vice doesn't have to be fixed, nor does it have to be large. Portable vices can be set up when required and if you are working in a flat or house, it is easy to put the vice away when not in use.

A **coping saw** is used to cut out the outline.

Touchability. Finally, remember that any piece of carving or modelling should invite the viewer to touch it—either to stroke its smoothness or experience its jagged roughness. The designs in the next three chapters are most effective if polished silky smooth and the more care you put in at this stage, the more pleasure your sculpture will give.

Before starting the crocodile illustrated here, you will find it helpful to glance through the previous chapters on shaping wood: buttons and boxes, Modelling chapter 1, page 266; and abstract shapes in laminated plywood, chapter 2, page 580.

Wood. Some woods are easier to work than others so choose a mild working





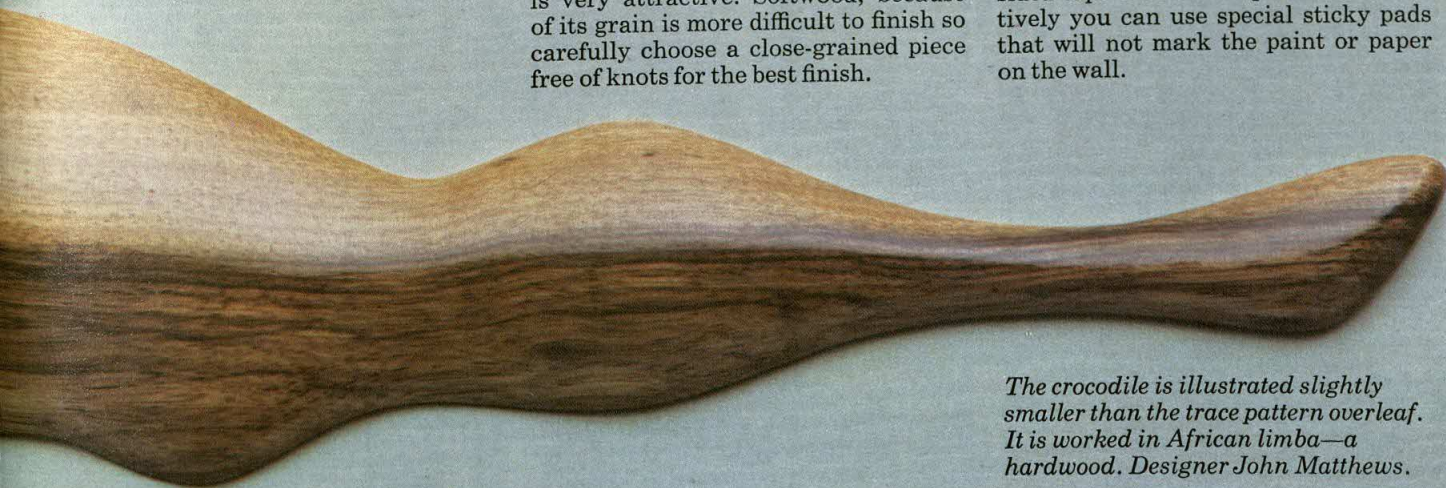
The seal is laminated plywood in high relief. The other designs are three dimensional. Designed by John Matthews.

hardwood such as sycamore, teak, walnut, African limba, African makore, or chestnut. If the wood is hard and close grained, you will have to work harder at removing the waste wood.

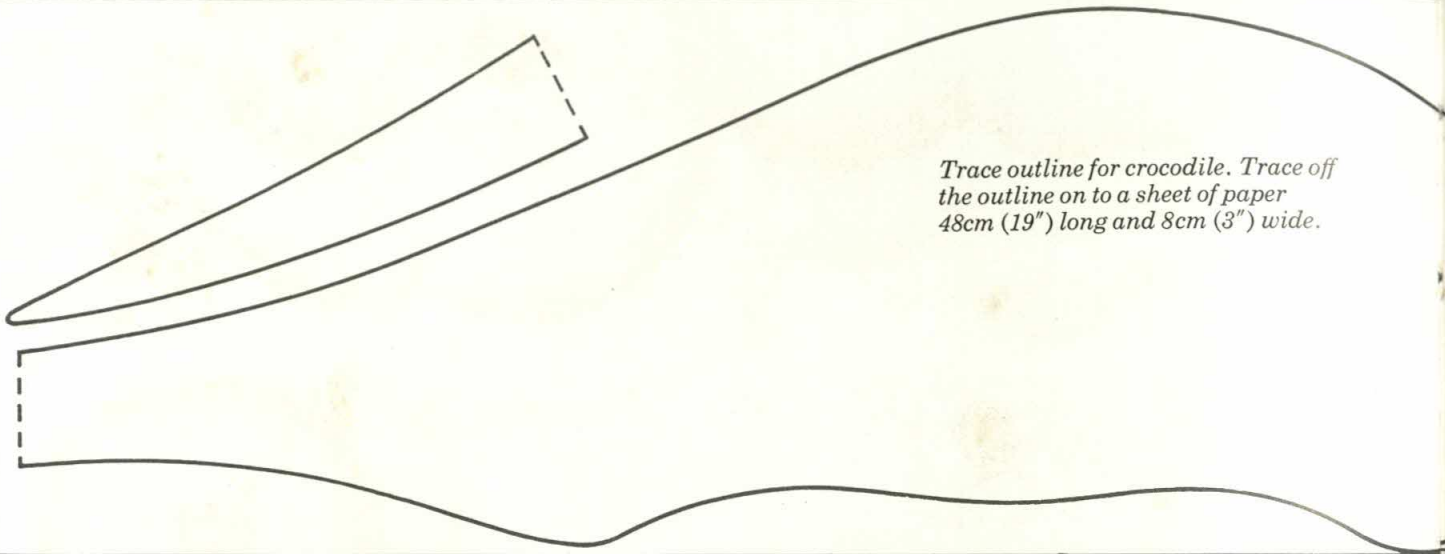
It is not always easy to obtain a specific type of hardwood so you may have to make do with what is available. If you have a piece of softwood you can use it to experiment on—parana pine is very attractive. Softwood, because of its grain is more difficult to finish so carefully choose a close-grained piece free of knots for the best finish.

Sculptured crocodile

The high relief sculptured crocodile is worked in a piece of hardwood. It is 47cm (18½") long and can be attached to a wall with suction buttons, double-sided tape or metal clips etc. Alternatively you can use special sticky pads that will not mark the paint or paper on the wall.



The crocodile is illustrated slightly smaller than the trace pattern overleaf. It is worked in African limba—a hardwood. Designer John Matthews.



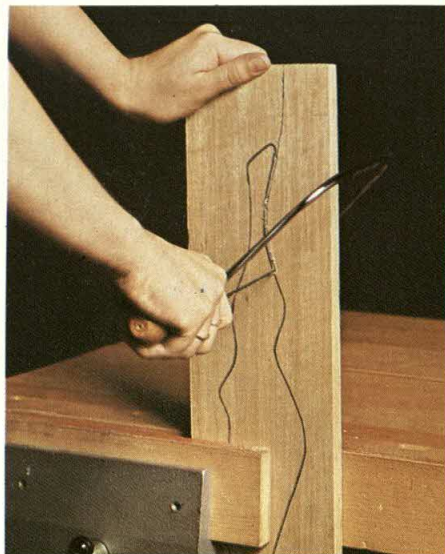
Trace outline for crocodile. Trace off the outline on to a sheet of paper 48cm (19") long and 8cm (3") wide.

To make the crocodile

You will need:

A piece of hardwood 75mm x 15mm (3"x $\frac{5}{8}$ "), 51cm (20") long—the wood does not have to be planed smooth. Try to obtain an off-cut or experiment with a piece of close grained softwood, which is free of knots—with some experience knots can be incorporated into the design. Other suitable timbers include teak, walnut and chestnut. Tools and equipment—see Tool Box. Half-round wood file. The design on tracing paper and a pencil. Carbon paper. Glasspaper, grade M2 (medium) and grade F2 (fine) or medium and fine grade sandpaper. Wax or polyurethane varnish to finish.

☐ Transfer the design on to the piece of hardwood.



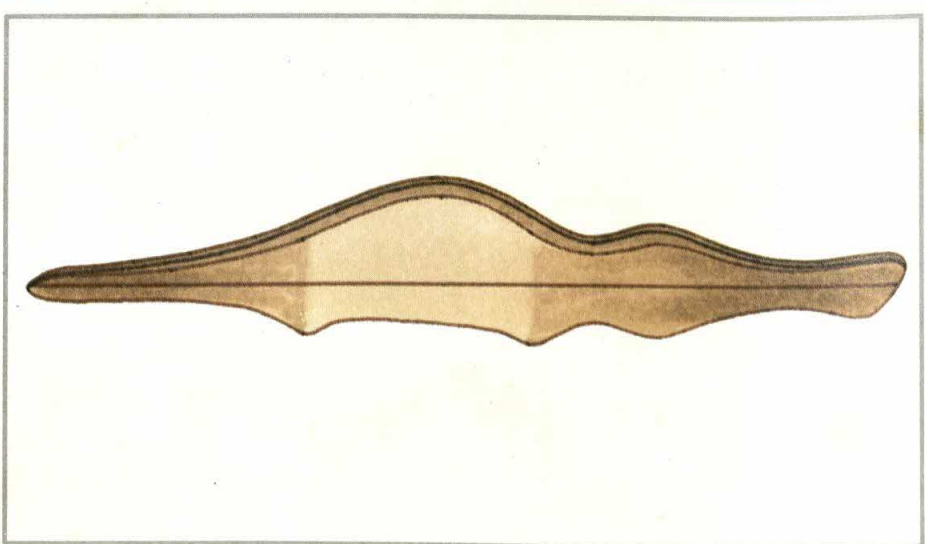
☐ Remove the waste with a coping saw, ie cut out the outline (Carpentry chapter 8, page 548).



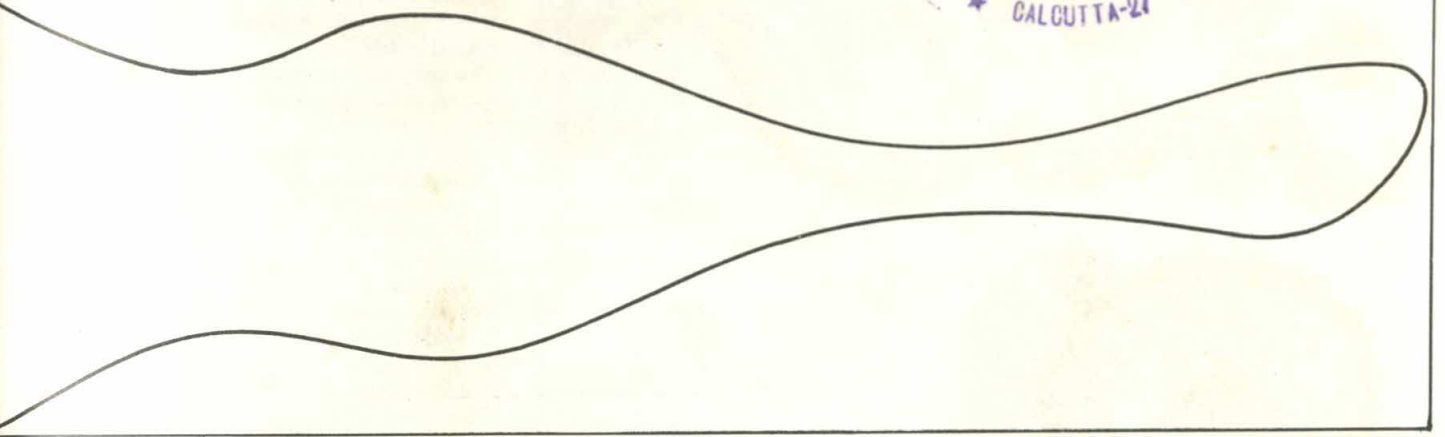
☐ Use the round Surform to tidy the edge and to remove any remaining waste.



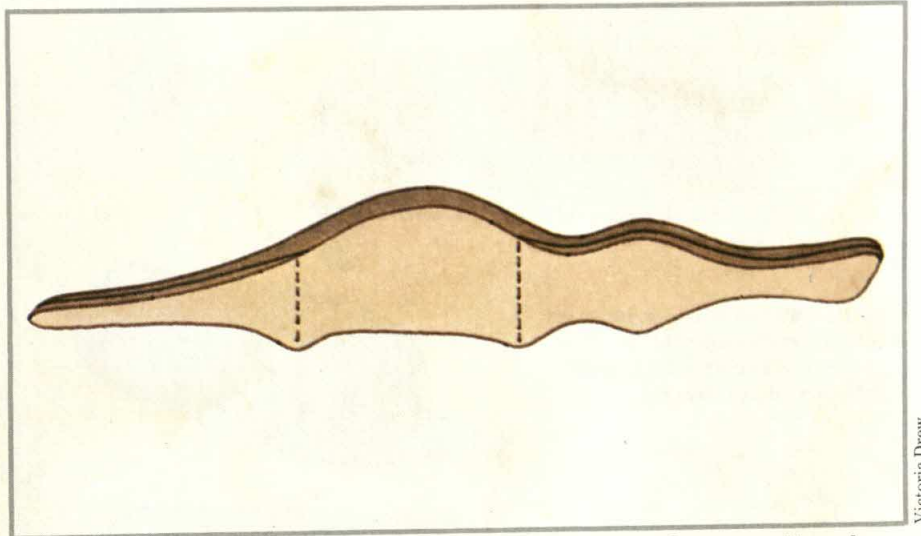
☐ Use the flat Surform and remove the waste down to the taper lines.



☐ Along the length, on the facing surface, draw a central line. Draw a line around the side edges 3mm ($\frac{1}{8}$ ") from the back.

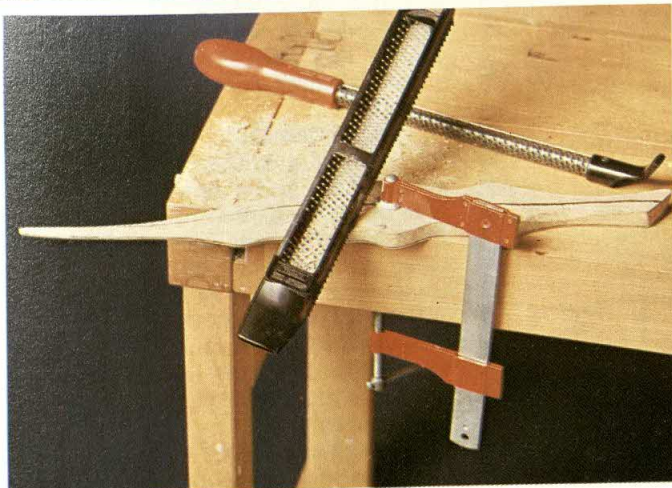


Work down to the outline and keep the side edge at right angles to the facing surface.



□ Decide on the facing surface, ie which will be the front. Mark out where the head and tail taper along the side edge.

When marking the taper lines leave a minimum of 6mm ($\frac{1}{4}$ ") thickness to prevent the wood from becoming too thin and causing it to break.



□ Working from the front, round off the wood from the centre line towards the lines on the side edges. Continue working until all the edges are

rounded, ie there must be no angles on the facing surface. Make sure you do not alter the outline of the crocodile while doing this.



□ For a smooth finish use the half-round wood file, the M2 glasspaper and then the F2 glasspaper.

□ Polish or varnish the surface.

Take a tube

Design
know-how 44



Cylinders or tubes are among the simplest shapes to make and are based on two circles joined together by a rectangle. Craft applications include cylindrical pots built on the slab or wheel method, bolster cushions and round boxes.

The easy way to make a tube is to join together two sides of a rectangle (fig.1). Join a rectangle on its long sides to make a tall, thin tube; join along its short sides to make a short, wide tube. If you want to make a cylinder to a particular size, however, or to calculate its capacity you need to know the basic mathematics of a circle (see Design know-how chapter 1, page 28). **To calculate the rectangle.** Say you want to make a bolster 35cm (14") in diameter and 76cm (30") long (fig.2). How much cloth will you need for the wrap (fig.3), ie the rectangle?

First, draw up two circles with a radius of 17.5cm (7") for the ends.

To calculate the amount required for the wrap, use the following formula: $C = 2\pi r$, (C = circumference, $\pi = \frac{22}{7}$ and r = radius).

In the case of the bolster, $C = 2 \times \frac{22}{7} \times 17.5\text{cm (7")} = 110\text{cm (44")}$. So the rectangle needs to be 110cm x 76cm (44" x 30"), plus seam allowance.

Cubic capacity: solids

Fillings for cushions are often sold on a cubic capacity basis, and it is useful to be able to calculate the amount of, say, polystyrene pellets you would need to fill a cylindrical bolster (fig.4).

Area. You need to know the area of the circle at the end of the bolster. Use the following formula: $A = \pi r^2$; (A = area and r^2 = radius x radius).

For the bolster, $A = \frac{22}{7} \times 17.5\text{cm (7")} \times 17.5\text{cm (7")} = 962.5\text{ sq.cm (154 sq.in.)}$.

To calculate the cubic capacity multiply the area by the depth, in this case $962.5\text{ sq.cm} \times 76\text{cm (154 sq.in.} \times 30") = 73,150\text{ cu.cm (4,620 cu.in.)}$. This is the quantity of bolster filling you will need to buy. Just remember there are 1,728 cubic inches in one cubic foot.

Cubic capacity: liquids

If you make a cylindrical milk jug, it is useful to know how much it will hold (fig.5), eg a pint or litre.

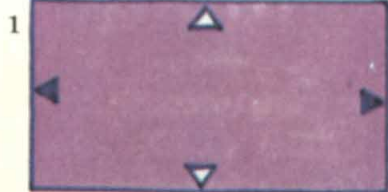
First, calculate the area at the round base by using πr^2 . Let us say this comes to 58 sq.cm (9 sq.in.).

1 litre = 1000 cubic centimetres.

1 pint = 34.67 cubic inches.

So, to find out how tall you need to make the jug, divide the base area into the cubic capacity.

Nine divides into 34.67 just under four times, so you will need to make the jug at least 4" high. You may find it a good idea to add an inch or two to make it easier to carry about when full.



You want to make a bolster out of very expensive velvet: exactly how much cloth will you need?

